

# FLIGHT

The  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

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## Flight,

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## EDITORIAL COMMENT



WING to the fact that these comments are being written on the first day of the Air Conference, the interesting remarks which will no doubt be made during the discussions taking place on the second day cannot be included in this week's issue of FLIGHT. As the discussion of papers is often more interesting and instructive than the paper itself, this is unfortunate but unavoidable. Next week we hope to deal with more of the papers, and also with the discussions following them and the reading of the paper on "Civil Aviation" by Lord Gorell, Under-Secretary of State for Air, a résumé of which is published elsewhere in this issue of FLIGHT.

### The Air Conference

As regards the Conference itself, it is too early yet to express an opinion on whether or not it has proved a success, and likely to attain the object for which

it has been called, which is, presumably, to afford an opportunity for bringing together those who are interested in the art and science of aviation, and those to whom we must look for that general utilisation of flying which alone can establish that prosperous aircraft industry which is an essential to the future safety of the Empire. The discussions will no doubt go a long way towards establishing whether or not this aim has been attained. In the meantime, one judges from the attendance at Waddon aerodrome on Monday and at the Guildhall on Tuesday that considerably greater interest is being taken in the Conference this year than was the case in 1920. Representatives of a number of foreign powers were seen at Croydon and also at the Guildhall, and especially was Japan well represented. In view of the fact that the Air Conference is not, unfortunately we think, of an international character, this is all to the good, and is an indication that these conferences, which are looked upon as mere "stunts" in several quarters, are regarded by a good many foreign nations, at any rate, as something more, and something from which valuable information may be gathered. Next year it is to be hoped that it will be found possible to make the Air Conference international, so as to afford an opportunity of discussing in public a matter which is of the very greatest importance to all civilised nations, and which must of necessity be greatly of an international character, the more so as air traffic increases and more and more countries are linked together by the airways.

### Lord Gorell on Civil Aviation

The paper on "Civil Aviation" read by Lord Gorell, Under-Secretary of State for Air, had been looked forward to with a considerable amount of expectancy, as it was generally supposed that the paper would contain an explanation and defence of the past policy of the Government, and an indication of future developments. To a certain extent these anticipations proved correct, as will be gathered by a perusal of the résumé of the Under-Secretary's paper published elsewhere in this issue. However, there was probably less of apology in it than many had expected, and the noble Lord stated—in quite a dignified and statesmanlike way, we think—the reasons which have led to the policy adopted and those which have caused so many of the suggested

schemes to be abandoned. On the whole we do not think there is a great deal wherewith to find fault. If the country is unwilling to spend more money on the development of an industry upon which vastly more depends than is dreamt of by the vast majority of the general public, well it cannot expect to see very rapid progress being made. In the meantime, however, other countries are taking a different view of the matter, and, although there is a great deal in Lord Gorell's contention that what suits, for instance France, would not necessarily suit us, we cannot help thinking that a great deal more might have been done than has been done to render assistance to civil aviation. Presently we will indicate one way in which Government action could assist, without entailing any, or at any rate but a very minute, sacrifice on the part of the taxpayer. In the meanwhile, there are one or two points in the Under-Secretary's paper which call, we think, for comment.

For instance, Lord Gorell expresses the opinion that "in the future the main air lines of the British Empire will be primarily airship lines with branch aeroplane lines running off from them." With whose airships are these lines to be operated? Surely we do not contemplate the acquisition of flying stock from our late enemies, while our own technical staffs are being allowed to disperse and the few existing ships allowed to "rot" in their sheds? It is true that Lord Gorell followed up the expression of his hopes for future airship lines by stating that "suspension of activities, being based solely upon financial considerations at the present time, can have no finality about it." If Lord Gorell, and the Government which he represents, does not make up his mind very soon, we venture to say that there *will* be finality about it, for the simple reason that we shall neither have the technical staff nor the requisite works for the production of anything larger than a kite balloon.

Lord Gorell complains of the relatively small interest taken by the general public in air mails. We would respectfully point out that this lack of interest although admittedly to a certain extent due to the present inability of aeroplanes to make regular night flights, is to a far greater extent due to the indifferent way in which the majority of post offices deal with the question of air mails. Not only do the majority of the officials know precious little about times of posting, fees, saving in time, etc., but as often as not the little blue labels are out of stock, or someone has mislaid them, or some other equally futile excuse for indolence. Furthermore, the inconspicuous notices put up in post offices are certainly not calculated to attract a great deal of attention. Something of a much more striking nature is required if public attention is to be called to the use of the air mail. During the War the Government made good use of advertising in its various forms, and if the G.P.O. is so anxious to help as Lord Gorell would have us believe, it might prove a good business investment to spend a little more on advertising the air mail.

We might also add that the relative failure of the air mail on the London-Paris route is in a great measure due to the fact that the terminal arrangements for dealing with the mail are too prehistoric compared with the aeroplanes themselves. It is of little use hurrying mails across from Croydon to Le Bourget in a couple of hours if three or four

hours are wasted at each end in getting the mails to and from the aerodrome and distributed.

That, under these conditions, the public response has been small is scarcely to be wondered at, but the fault does not lie with aviation. The terminal arrangements could be improved to such an extent that, even without flying at night, the use of air mails to Paris would be well worth while. Lord Gorell further says that if aviation can prove capable of carrying mails as reliably, as cheaply and faster than existing methods, then the G.P.O. would use the air mail. And small thanks to it. So would anyone but an imbecile. The trouble has been all the time that the whole thing has been run on such an absurdly small scale that it was impossible to make it cheap. Only by running air services on a large scale could they be made to pay, and that scale has not yet been attained, nor, it seems, is it likely to be, if we depend upon the Government to see to it.

In spite of the fact that it was suggested over and over again in the past, and very specifically by Mr. Holt Thomas more than two years ago, nothing has been done yet, and we could have wished that Lord Gorell would have quoted Holt Thomas on this subject as he has quoted him towards the end of his paper. We are referring to the resolution passed at the previous Air Conference to send all first-class mail by air. This was proposed by Mr. Holt Thomas, and the resolution was passed unanimously. There is not the slightest doubt that if this were done mails could be carried at rates very little, if any, higher than existing ones. It would thus not impose any hardships upon the users of the air mail, and in any case, with proper terminal arrangements, the saving in time which could be effected would not make it a great hardship on users of the air mail to pay a little higher for the privilege of the improved communications. If night flying were rendered possible—as Lord Gorell seems to think this essential—the position would be even more in favour of air mails, and, with all due respect, we would humbly point out that night air mails have been perfectly possible for the last three years. It would only require a few small non-rigid or semi-rigid airships to maintain a regular night service between London and Paris. With the wireless and meteorological facilities now available, this would entail no difficulties, and as Lord Gorell has expressly stated that he believes one type of aircraft to be complementary to the other, he has here an opportunity of demonstrating the courage of his convictions.

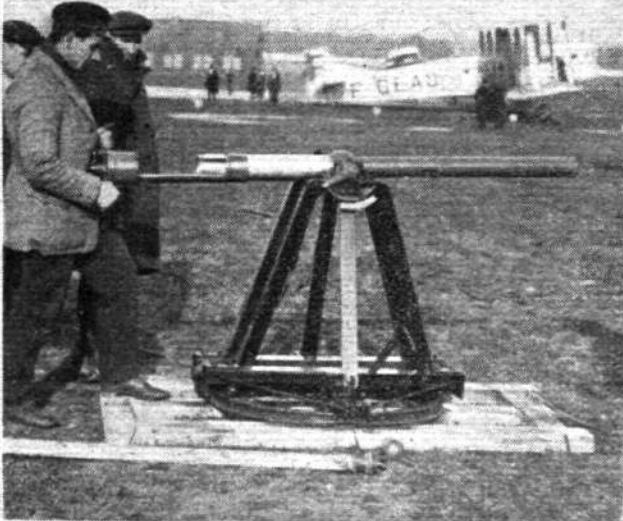
If all first-class mail matter to France and the East were compulsorily sent by air mail, aeroplanes being used for the day mails and small airships for the night mails, the safety and regularity of running should be sufficient to satisfy even the G.P.O., and would have the advantages of assisting civil aviation, and through that the Empire generally, very materially, and at the same time need not entail any great expenditure of money over and above what is already being spent. A minor re-adjustment of the subsidies might be necessary, but, practically speaking, that would be all.

These comments more or less apply also to Lord Gorell's statement that we must concentrate on the Channel services, and must learn how to make one service, a commercial service, a success. If the mails were sent by air as a matter of course, this would

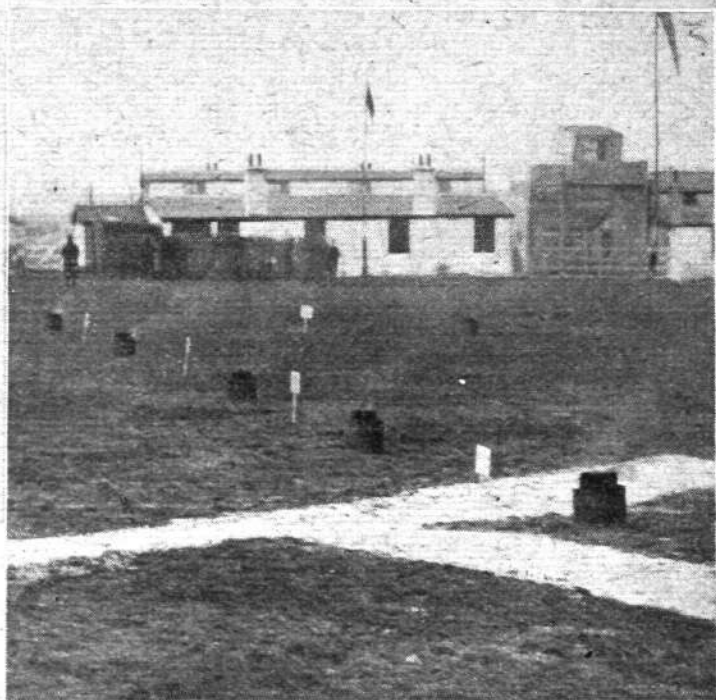




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FROM THE AIR CONFERENCE VISIT TO WADDON: The upper picture shows visitors inspecting the machines lined upon the aerodrome. The lower photograph gives a good idea of the different types of machines on view. Vickers "Vimys," "D.H." monoplane, and several types of "D.H." biplanes, Bristol Ten-seater, Farman Goliaths, etc. Fig. 2 shows the gun used for firing signals into the air, and in Fig. 3 is seen a row of flares of the type used for assisting pilots to land at night.

mean a certain fairly fixed income for the companies operating, and would go a long way towards minimising the losses which are now incurred owing to the failure of the Government to guarantee a certain load—which has resulted in the necessity for heavy subsidies.

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#### What of the Sea?

With regard to Lord Gorell's views upon Imperial air services, and his opinion that it is best to let these be established by the R.A.F. for linking up its various centres, we are not inclined to quarrel with this. As things are at present, this is probably the best policy, and, as the Under-Secretary stated, the time may be nearer than one is inclined to think when the establishment of Imperial air services, with aerodromes adjoining, or forming part of, R.A.F. stations will enable such services to be operated with some prospect of commercial success. We should like to point out, however, that this day might be brought appreciably nearer if we paid more attention to the aircraft which should be to us, as essentially a maritime nation, the most natural, indeed the most obvious, type of aircraft of all, *i.e.*, the seaplane with its latest development the amphibian. By utilising seaplanes Imperial air services could be, in many instances, established with a very small outlay of money, as no prepared aerodromes are required, and floating repair and fuel depôts could be established and maintained at relatively low cost. If the country cannot, or is unwilling to, find the money for Imperial airship services, we would urge that the possibility of employing seaplanes in conjunction, possibly, with existing routes now covered fairly regularly by the R.A.F. be given full consideration.

The seaplane offers many advantages over the land type of machine in many respects, although it may be admitted to be inferior in certain others. For instance, it does not, as we have already mentioned, require specially prepared aerodromes costing a lot of money to establish and maintain. The problems of flying at night or in a fog are far less serious where the seaplane is concerned than they are to land machines. It is quite a simple matter to provide instruments which will indicate to the pilot of a seaplane when he is 30 or 40 feet above the sea, and as he has only altitude and wind direction to worry about—and is not faced with the further problem of finding a comparatively small piece of specially prepared ground on which to land—his problems are greatly simplified.

It is generally alleged that the seaplane, and by this we mean both twin-float machines and flying boats, is inferior to the aeroplane in speed and load carrying capacity. If we compare the two for any given route, there may be a certain amount of truth in this allegation, although not, we are certain, nearly as much as generally imagined. But it should be borne in mind, and this fact is, we fear, universally overlooked by the advocates of the aeroplane as against the seaplane, that whereas the aeroplane has to compete against fast trains and, possibly, motor road transport, the seaplane has nothing worse to beat than a speed of, say, 20 m.p.h. Thus if a seaplane will do 70 m.p.h. cruising speed it is in an excellent position to compete for speed with any surface craft, while her useful load can then, owing to the relatively low speed required, be increased to exceed that of

the aeroplane of the same power. Thus the main, indeed the only, objection raised against the seaplane falls to the ground, and we frankly confess that we are very greatly disappointed at the way in which the seaplane has been practically ignored at the Air Conference. Not a word is mentioned about it in Lord Gorell's paper, and it remains to be seen whether this subject is brought up during the discussions. We sincerely hope it is. The valuable pioneer work done by such firms as Shorts, Supermarines, Avros, Faireys, Vickers, etc., surely merits some mention. Even apart from commercial air lines, the seaplane is capable of very great services. This statement is not based upon conjecture, but on accomplished facts. For assisting out fisheries, for sealing, whaling, etc., for forest patrol and for surveying tracts or otherwise inaccessible land the seaplane can do and has done extremely valuable work, and it has done it in districts where the aeroplane would have been useless, owing to the absence of suitable landing grounds. Why, at a conference which is generally supposed to have been called to bring the various business interests into contact with the aviation industry and to show them the advantages which aviation can offer them, has the seaplane been left so severely alone? We hope that it is merely due to an oversight and not to any failure on the part of the Air Ministry to realise its possibilities.

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#### The Civil Aviation Advisory Board

Lord Gorell's announcement of the establishment of a body to be known as the Civil Aviation Advisory Board, and including representatives of the Air Ministry, the Controller of Civil Aviation, the D. of R., the G.P.O., the Associated Chambers of Commerce, Lloyd's, the Royal Aeronautical Society, the Air League, the Royal Aero Club, and the S.B.A.C., will, we feel sure, cause immense satisfaction. The greatest difficulty at the present time is not so much one of technical problems as it is one of bringing together the various institutions upon whose collaboration the rate of progress will mainly depend. If properly administered such a body as the new C.A.A.B. cannot fail to be of the greatest assistance to the industry, and, we think, through that to the country and Empire in general. We recommend to the C.A.A.B. in dealing with the first subject to be referred to them, to give due consideration to our remarks relating to the sending of all first-class mails by air, and the use of airships and seaplanes in addition to that of aeroplanes.

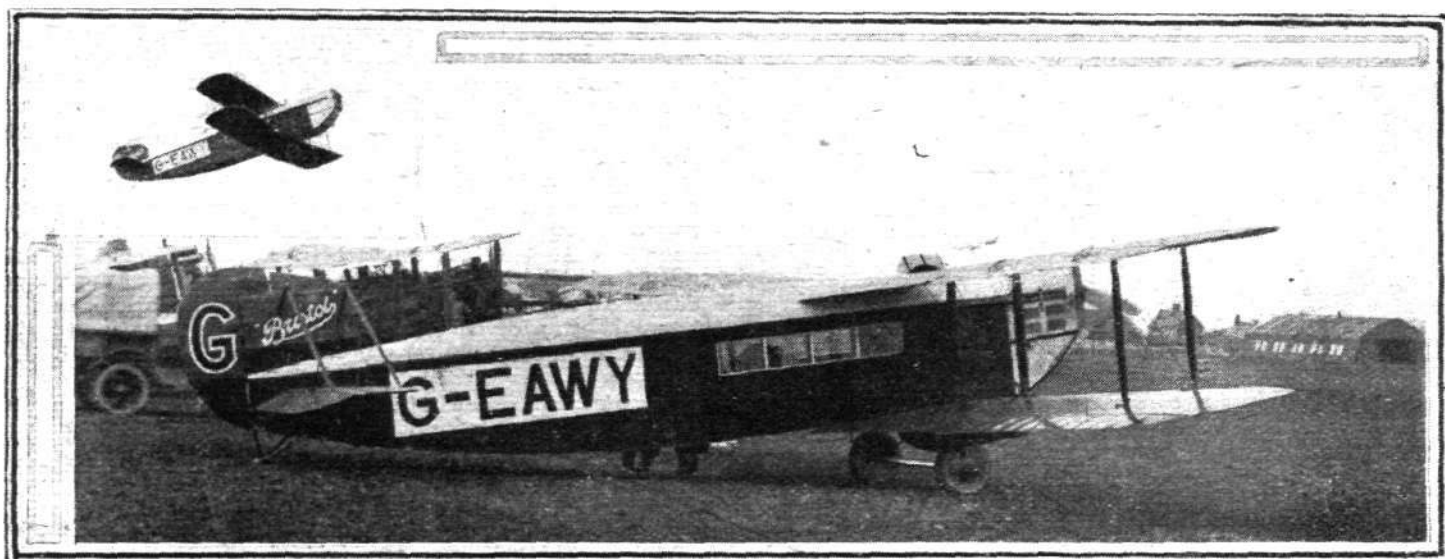
Finally, the opening pessimistic views of Capt. Guest at the Conference, as to home and European aerial routes, are not very re-assuring as to his being the right man in the right place as Secretary of State for Air, although his optimism upon the possibilities and necessities of Imperial air communications in a measure redeems the value of his opinions. But for the sake of our industry and aircraft generally there is one fact in the position which he and a good many are inclined to either ignore or wilfully to forget, and that is that the pace in aviation progress will not be confined to the pace set by our "ostriches"—our pace, presently, will have to be a bit better than that of some very lively nations who have very firm and advanced ideas of the future of aircraft. And thank God for it!



## THE AIR CONFERENCE VISIT TO WADDON

EITHER the Air Council is especially favoured by Aeolus, or the Air Ministry Meteorological Service is better than generally thought. When visitors to the Air Conference made a tour of inspection of the London Terminal Aerodrome at Waddon on Monday, February 6, the weather was far and away better than one had any right to expect at this time of the year. There was practically no wind, and what little there was enabled the machines to take off and alight along the aerodrome instead of across it. There was blue sky and bright

the visitors were met by Sir Frederick Sykes, C.G.C.A., and General Festing, who informed them that this was the site on which, in the future, the machines would be stored, and the various offices situated, and that the buildings over by Plough Lane were temporary only. The party then divided into smaller groups, each under a guide, who conducted them over the aerodrome, and explained the various organisations, services, etc. A number of machines were drawn up for inspection, among which were some of the latest types such



The Bristol 10-Seater. Inset, the machine in flight.

sunshine throughout the time of the visit, and altogether it would have been impossible to improve upon Nature's side of the ground organisation.

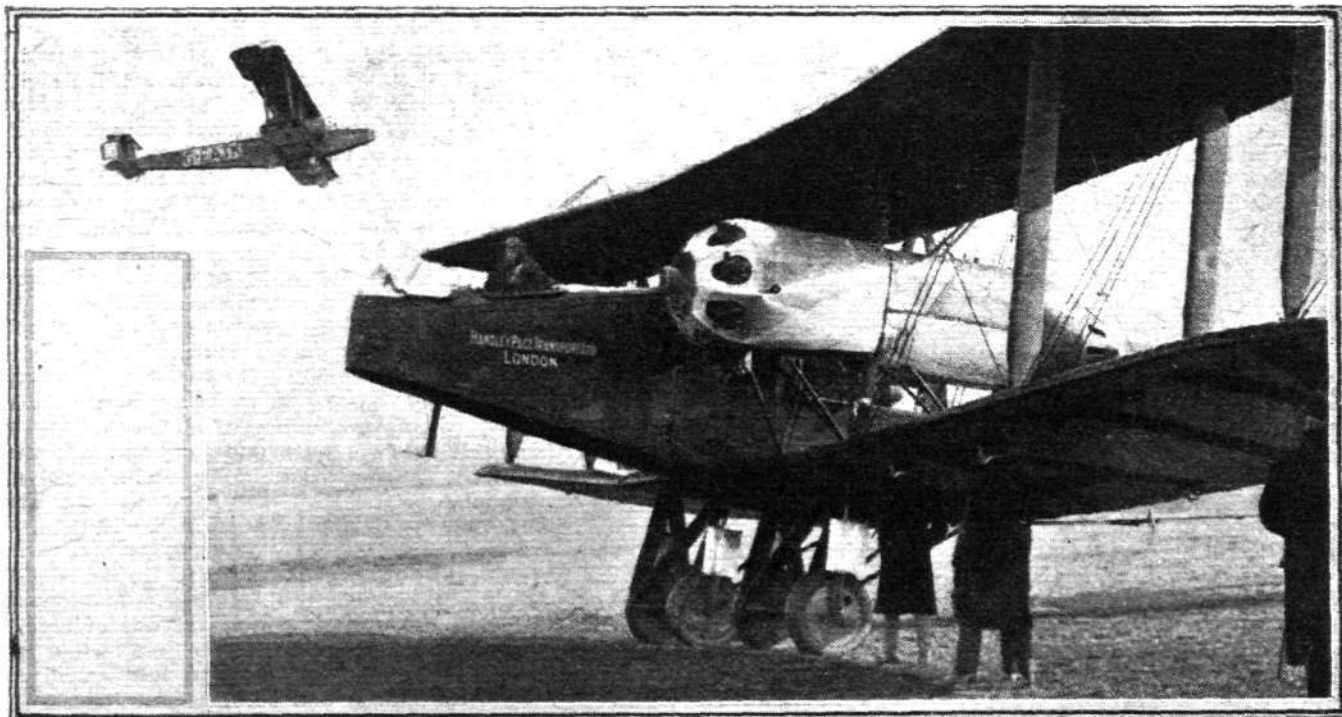
The visitors left Victoria by special train at 10 a.m., and, instead of being ferried across from Waddon station to the aerodrome in motor vehicles, the train was run into the Aircraft Disposal Co.'s siding on the eastern side of the aerodrome. As this is the ultimate site for the aerodrome establishment, it served to give the visitors some idea of the future aspect of London's terminal aerodrome. By the time this comes into being, one hopes the railway track will be run a little more direct, and not necessitate going a long way past Waddon station, and then coming back again, as it does at present.

Passing through a part of the large A.D.C. establishment,

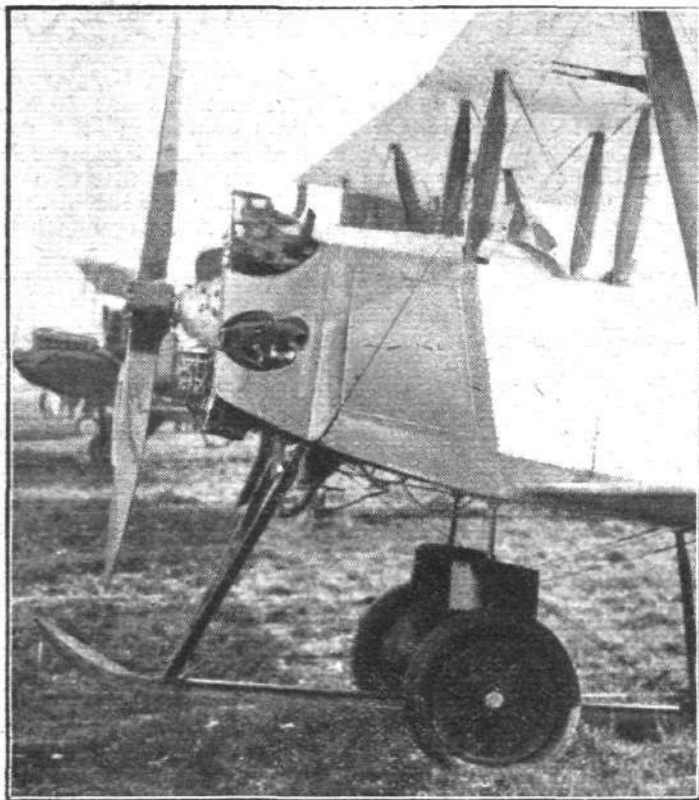
as the de Havilland monoplane, type 29, the Bristol Ten, seater, etc., while, by way of showing a racing aeroplane—the Gloucestershire Aircraft Co.'s "Mars I" was also on view. There was a very good representation of older types, which, after all, are the machines that have done the pioneer work up till now, even if they will, most of them, be superseded for more modern ones in the spring.

In addition to "D.H.18's," Vickers "Vimys" and "Vikings," "D.H.9c's" and "D.H.4c's," there were Handley Page "o/400's," Goliaths, Spads, and Westlands. Other machines, some belonging to the A.D.C., were flying overhead, and altogether the scene was one of unwonted activity for this time of year.

A number of passengers were taken up, the demand being



The Handley Page 0-400 (2-400 "Jupiters"). Inset, in flight.



An Avro Biplane fitted with Armstrong-Siddeley radial engine.

especially brisk for the Bristol Ten-seater, whose very comfortably appointed cabin appeared to be a great attraction. The machine certainly flies very well, getting off quickly, and landing very smoothly. The Vickers "Vimys" belonging to the Instone Air Line did a lot of flying also with full loads, and, as usual, were extremely well handled by their pilots, doing banked turns at very steep angles, steep climbs, and other evolutions. The manner in which they were landed by their pilots, without a trace of a jolt, was the subject of appreciative comment by many visitors.

A Handley Page "o/400," fitted with two Bristol "Jupiter" engines, showed a most remarkable improvement in performance, getting off quite rapidly, and altogether handling much more "lively" than before the "Jupiters" were installed. We understand that, in its new form, the machine carries 900 lbs. more load, besides being a good deal faster, so that the "Jupiters" appear to have effected a very considerable improvement in this type of machine. One awaits with interest the arrival of one of the Bristol ten-seaters, fitted with this engine. By the way, the new Bristol gas engine starter is fitted to this Handley Page, being placed in the fuselage, and starting both engines in turn. The weight of some 50 lbs. or so of the starter is, of course, quite a negligible quantity in so large a machine.

An Avro fitted with Siddeley radial engine was on the ground, but was not flown. We understand that Mr. Hinkler, accompanied by his wife, flew the machine up from Hamble on Saturday in very thick weather. This machine is said to fly very well, and this makes yet one more type of engine to be fitted in the Avro. We still have hopes of seeing one fitted with a Napier "Cub" before we die.

A Vickers "Viking III" was also on view, but did not fly. The "Viking IV" was expected to be there, but was not seen. It is to be regretted that some of the other seaplane firms were not represented, many of whom have done extremely valuable work. At the previous Air Conference several amphibian machines were on view and flying, and the reduction to one representative (and that an old type) is greatly to be deplored, the more so as the British Empire offers an enormous field for seaplanes and amphibian machines.

After spending a couple of hours or so on the aerodrome, the visitors returned to Town, many extremely pleased with their flights, and who will do useful propaganda work in the future. Others take a more serious view of the situation, lamenting the small amount of progress, especially as regards really efficient commercial types, which the visit revealed. That several new types are coming along in about one or two months' time does not greatly help matters as regards the present visit, and, frankly, with the exception of two machines, there was no aeroplane at Waddon on Monday

last which could not have been seen there also on the occasion of the last Air Conference in 1920. But perhaps we are making haste slowly.

ON Tuesday morning, the Lord Mayor, Sir John Baddeley, welcomed the delegates to the Conference at the Guildhall, Capt. F. E. Guest, Secretary of State for Air, who presided at the morning session, following with some opening remarks. Lord Weir occupied the Chair during the afternoon Session. Capt. Guest said the object of the Conference as it appeared to him, was mainly to encourage civil aviation. It was eighteen months since they held their last Conference, and, during the interval, the Government had not been inactive. By its research programme, certain landmarks had been placed on record, which, though developed under the Service side of the Ministry, would be of permanent value to civil aviation as well. Although our development had been slow, yet it had been sure, and the best test of that was that our safety line was the highest in Europe.

There were remarkable figures to prove the high level of our safety line. During the past year, nearly 50,000 people had been carried in the air. There were 25,000 flights, and only two fatal accidents had been recorded. That, he submitted, showed that the safety line had reached a high standard. In regard to airships, in his view, the outlook was not hopeful. One of our great Dominions had shown a desire to join in an Imperial scheme, but he regretted that the Dominions of New Zealand and South Africa, owing to the stringency from which the world was suffering, did not so far see their way to co-operate. Complaints had been made that we were losing our premiership in this connection and surrendering our lead to other countries. He submitted that the information that had been available regarding the developments in other countries had been largely exaggerated, and we need not have any fears on that score. Another complaint was that the closing down of the airship branch of aviation would have the effect of dissipating and perhaps permanently losing all the staffs and designers, without whom it never could have been created. He thought that was true if the outlook were limited to a few years.

His belief, however, was that the period of depression would be longer, and that it might be many more years than two or three before there was sufficient spare cash to undertake this commercial venture. If the period of, say, ten years, were considered, and if the recommendation from some of them was that during that period a very heavy subsidy should be found from the Government to keep it going, he submitted that they could start it all again at the end of that period *de novo*, without its costing any more money. In his belief, taking the long view of aircraft traffic in general, there was little or no prospect of a real commercial success being obtained in Europe. England in the last few years had shown itself to be so well railway-loaded as to render it unattractive and unprofitable to develop aircraft from a commercial point of view. He was almost of opinion that that was true of Europe generally, and that the prospects of real commercial success in Europe were not very great, and would not be for many more years to come. He believed that to be true to a lesser extent in America also. Nor should they expect too much from the cross-Channel service from the commercial point of view.

But to counterbalance all this, there was an extremely bright outlook, so far as the British Empire was concerned, abroad. We were the one great Empire which had great spaces and distances unbridgeable except by sea, and it was to that aspect that our future attention should be directed. He could see in his mind's eye the possibilities of Imperial air communications on lines which might have struck many of them already. The transportation of both a mail and passenger service from London to India was, in a way, when accomplished, going to be of far greater value to the Empire, and, probably, of greater commercial success to those engaged in it, than that between Paris and London. He was rather hopeful that the far-flung Dominions would perceive that a sum of, say, £250,000, which was suggested in the Australian Parliament, might be available to join in the Imperial scheme, and that it would be many times more productive if linked up from the last portion of the route in the heavier-than-air service, from, say, Singapore to Australia. The tone for them to adopt during the present period was one of sure, simple, but not extravagant, optimism. The time should be spent, as he thought it had been in the last two years, in strengthening the liaison and co-operation between the Air Ministry and the aircraft industry, and they should have as their motto for the next year, "Sit tight, work hard, don't stunt, and be ready for better times."





The De Havilland "29" Monoplane paid a flying visit to Croydon on Monday.

## THE AIR CONFERENCE

### Résumé of Lord Gorell's Paper

THE Second Air Conference, called by the Air Council, opened on Tuesday, February 7, at the Guildhall. The chairman, during the morning session, was the Rt. Hon. Capt. F. E. Guest, C.B.E., D.S.O., M.P., Secretary of State for Air, while the Rt. Hon. Lord Weir of Eastwood took the chair during the afternoon session. During the morning, papers were read by the Rt. Hon. Lord Gorell, C.B.E., M.C., Under-Secretary of State for Air, and by Lieut.-Col. W. A. Bristow, M.I.E.E., M.I.A.E., F.R.Ae.S. The afternoon session opened with a paper by Major F. M. Green, O.B.E., M.I.C.E., F.R.Ae.S., followed by papers by the Director of Research, Brig.-Gen. R. K. Bagnall-Wild, C.M.G., C.B.E., F.R.Ae.S. and by Major G. H. Scott, C.B.E., A.F.C., A.M.I.M.E.

Space does not permit of publishing all the papers this week, and we have had to content ourselves with publishing a résumé of the paper read by Lord Gorell, entitled "Civil Aviation." The subject is a large one, and the paper was, of necessity, a somewhat lengthy one. As, however, the Under-Secretary of State for Air dealt at some length with subjects with which readers of *FLIGHT* are already well acquainted, we have been able to condense portions of the paper very considerably, while in the case of others it is hoped that the main points made have been incorporated in the following résumé. In our Editorial Comments columns will be found certain comments on such portions of Lord Gorell's paper as seemed to us to call for special mention. As will be seen, our comments are in the nature of criticisms of certain omissions, rather than of anything stated by the Under-Secretary.

#### Factors of Successful Development

In his introductory remarks Lord Gorell reminded his audience of the paper read by Sir F. Sykes, C.G.C.A., at the last conference, and stated that it has now become important to approach the subject of Civil Aviation as a matter of broad policy with which the Government are concerned. Lord Gorell pointed out that there is a decided increase in the interest now taken in the subject of civil aviation by the Press, and, consequently, by the general public, but that

it yet falls far short of the interest which this country ought to take in aviation matters, and that we have not yet shown the same general interest as a nation as has, for instance, France. He pointed out, however, that although a Government can do a great deal to assist development of civil aviation, still, in the long run, the real factor of successful development must be the amount of public interest put into it. "Until there comes to the British public," he said, "a real and substantial realisation of the potentialities of aerial transport and the opportunities afforded by it—a realisation, not in mind only, but in pocket also—I do not see how it will be possible for this new industry to develop on the broad basis on which all who have considered it realise that it should, and could, be developed."

#### The Service and Civil Sides.

Although confining his remarks chiefly to civil aviation, Lord Gorell mentioned briefly that he did not agree with the view that Service and Civil sides of flying are conflicting, but that, in his opinion, they are complementary one to the other. By way of a parallel, he mentioned the relation of the Mercantile Marine and the Navy. He thought there was one difference, and did not wish to press the parallel too far, namely that for many years to come success in the air, whether Service or Civil, must depend primarily upon constant scientific research, and he expressed the belief that research is the essential link between Service and Civil flying. Lord Gorell expressed the opinion that the experience gained with machines designed for troop transport must be taken into account by designers of commercial machines, and that these improvements, in certain types of Service machines, will be of direct service to civil aviation. He believed that the suggested organisation of an Auxiliary Air Force would make a further and valuable link between the R.A.F. and civil aviation, and would have the effect of diffusing among the general population the sense of the air, which he deemed of paramount importance in the development of all aerial activities.

On the subject of airships, the Under-Secretary had several things to say, chiefly in the nature of an explanation



The "Mars I" of the Gloucestershire Aircraft Co. was greatly admired by visitors to Croydon.

of the Government's reasons for abandoning airships. The cry for economy which was used as the reason for this fatal decision is already too well known to readers of this journal to need stating afresh, as are also the various plans put before the special Committee of the Imperial Conference, and the almost entire absence of tangible results up to the present.

Lord Gorell said that with regard to certain comments, alleging Government hostility or indifference to airships, his experience had been that the Air Ministry was anxious to discover, if possible, some practicable financial means by which the airship service could be maintained. He thought it was a mistake to concentrate solely on one type of aircraft and not on the other, as the functions of both airships and heavier-than-air craft, although different, are concerned with transport through the air, and the capabilities of each should supplement those of the other. He considered that the airship can be employed most economically over long distances and the aeroplanes over shorter distances. The Under-Secretary then referred to German airship activity, and mentioned that recently the Council of Ambassadors have agreed to allow Germany to build an airship for the United States. He then briefly referred to what is being done and contemplated by other nations, and concluded by expressing the conviction that the main air lines of the British Empire in the future, will be primarily airship lines, with branch aeroplane connections running off from them.

### The Progress of Civil Aviation

Turning now his attention to the general progress of civil aviation, Lord Gorell quoted the facts and figures relating to the progress in the United States, the chief Continental powers, the Dominions, and this country. As many of them were included in the recent half-yearly report of the Controller-General, we do not propose to refer to them in detail here, but will confine ourselves to a brief reference to Lord Gorell's remarks on the relative progress made in France and in this country. The total French civil aviation vote for 1921 was, Lord Gorell said, about 184½ million francs, or about 55 million francs more than in the previous year, and amounted to about half the vote for Service aviation. Thirty-three million francs was allocated for subsidies to air transport companies, and about 25½ millions to the construction of two rigid airships, airship bases and supplementary equipment. Lord Gorell pointed out, however, that it is not possible to arrive correctly at a comparison between the French effort and our own, merely by dividing francs into pounds, as francs go further than the pounds for which they can be exchanged.

The Under-Secretary of State for Air then called attention to the progress made in the matter of regular services, and pointed out how these have been constantly increased from 1919 up to the present time. He gave the following statistics, which are of considerable interest. The total work carried out by French civil aircraft in the period from January 1 to September 30, 1921, was as follows:—Number of flights, 5,115. Number of machine hours flown 14,100. Average duration of each flight 2 hrs. 45 mins. Approximate machine mileage 1,145,500. Number of passengers carried 8,761. Weight of goods carried 126 tons.

Lord Gorell next turned his attention to civil aviation in the United Kingdom, pointing out that the attention of the Government and of transport companies has been largely concentrated on the maintenance of regular services to and from the Continent. The greatest activity, he said, was shown in the summer months. In August 155 flights between this country and the Continent were made by British machines, which carried 920 passengers. He pointed out that although the number of flights last summer was only about one-third of those during the summer of 1920, the number of passengers does not show any serious diminution, the numbers being 4,006 and 4,336 respectively, while about 500 more passengers were carried in British machines than in French. French companies, on the other hand, captured the largest portion of goods traffic, carrying between April and October, 1921, 53 tons, as opposed to 11 tons carried in British machines. The reliability and efficiency were good, about 93 per cent. of flights being completed within 4 hours during April to September, and the number of accidents has been encouragingly small.

Lord Gorell also devoted portions of his paper to developments in wireless telegraphy and other signal work, and to the work of the Meteorological Office, as well as to mentioning two definite attempts on the part of the Air Ministry to encourage research. One of these dealt with the Air Ministry safety tank competition, and the other with the progress which has been made towards the successful solution of vertical flight by means of a helicopter.

### Foundations of a Prosperous Industry

HAVING thus outlined some of the most material facts and figures relating to the progress of civil aviation, Lord Gorell admitted that it would be idle to pretend that a comparison between the respective positions of this country and such others as France, the United States, and Germany can be considered satisfactory, although he did not think that a true estimate of the position can, at this stage, of development, be reached merely by comparison of facts and figures. He said that comparison has chiefly been made between the respective positions in France and in this country, and the question has been bluntly asked whether, when the figures of the two are set side by side, the French nation or we are right in the policy which each is pursuing. That, he said, is not a question which can be answered in a very few words. Many factors must be taken into account, and although it is true that much more flying is being done in France at the present time than in this country, that is not enough in itself to show that the French policy is right and ours is wrong. He thought that the recent Aero Show at Paris must have given those responsible for aviation in France serious thought for consideration, since, although the French have spent 33, and are about to spend 46, million francs on subsidies to civil aviation, he had found a fairly general agreement that in matters of design and construction the French have not advanced to the extent that might have been expected. Certain it is, Lord Gorell said, that a lavish policy of subsidies, though it must produce immediate and even striking results in the way of miles flown and lines opened, may not really be successful in producing the permanent results which those who believe in the development of aerial transport wish to see firmly established. Lord Gorell disclaimed any intention of criticising the policy which the French have adopted for themselves, and said he only questioned whether it is one which should be applied to this country. "We, in this country," Lord Gorell said, "should not be diverted by comparisons with other countries from what we conceive to be the best means to secure the object which best suits the interests of this country: and there is always a further difference with which we must reckon, namely, that national characteristics are by no means the same. It does not suit our temperament to advance far in any commercial enterprise, until we are satisfied as to the foundations. It seems to me, looking at it from the British point of view, that of all the necessary factors in the successful development of the civil aircraft industry, the first and greatest must be the bringing about in the public mind of a sense of safety: in other words, the first requisite of civil aeroplanes must be their trustworthiness, and, though I cannot claim to be able to pronounce technical judgments, nevertheless, from all the information which comes to me, I, personally, feel no doubt whatever that in this respect British machines at the present time lead the field."

The Under Secretary then called attention to the importance bearing in upon the public consciousness that travel by air is a normal means of journeying, and that this can only be done by ensuring before all else the trustworthiness of transport machines, and by maintaining this assurance over a long period of time. In this connection, Lord Gorell thought there will inevitably be, as competition grows, a tendency to get the most possible out of the pilots employed. It must never be forgotten, he said, that an overworked pilot may reduce the factor of trustworthiness to which he had referred as the first essential of commercial prosperity.

### The Cross-Channel Services

TURNING his attention to the cross-Channel services, and stating that he, as Chairman of the Committee which investigated the question of subsidies and framed the conditions concerning them, carried a direct responsibility for the policy adopted, Lord Gorell briefly summarised the history of subsidies. As this is already well-known to our readers, we need not go into the matter here. Regarding the decision of the Air Ministry to approve one additional firm for the London-Paris route, this has, Lord Gorell said, been criticised in some quarters on the grounds that it will diminish the chances of commercial success for all three, and those who made this criticism at the same time put forward the view that it was a mistake to concentrate on the cross-Channel services alone the money available for subsidies.

The Committee, he said, based their approval of three firms upon a careful consideration of the volume of traffic that might reasonably be expected, and had to steer between limiting approval unduly and extending it too widely. The Committee came to the conclusion that the traffic on this route might reasonably be expected to be sufficient to make the operation of three firms successful.



The Committee, Lord Gorell stated, took the views that it would be a mistake to spread the subsidy over other routes, and that in order to ensure progress we must concentrate, and must learn how to make one service a commercial success. He thought that the moment this has been done every other route lies open for development. The cross-Channel route was chosen because it is, he said, unquestionably the most important, as it leads to the Continent and links up with the trans-Continental lines. He thought it would be generally admitted that the preservation of this service was an absolute necessity, and that we must look to routes across the sea for the adequate development of aerial transport. He pointed out that, owing to the situation of this country on the north-west of Europe, expansion of transit by aeroplane is restricted to the south and east, at any rate unless and until aeroplanes can safely negotiate the Atlantic. Lord Gorell thought that if it had done nothing else since March last, the maintenance of regular cross-Channel services has, at least, converted many people to a belief in the future of the air.

Regarding the more permanent scheme for the cross-Channel services, Lord Gorell brought up the question of the return to the Air Ministry of machines used by the firms. It has always, he said, been charged against any policy of subsidisation, that it might result in keeping obsolete or obsolescent machines in the air. He admitted that this was a real danger, but stated that the interests of the firms and the interests of the Government were identical, the object of the former being to have the use of the best machines available, and the Government's object being to expedite the evolution of the ideal type of civil aeroplane. He stated that the Government has now been able to agree, for the present year, at any rate, that machines, if returned in an air-worthy condition, will be taken back after only nine monthly payments of 2½ per cent. of their value, in order that they may be replaced by the latest types of machines, if the Air Ministry is satisfied that the change is desirable from the point of view of forwarding design and construction. Lord Gorell did not wish to pretend that the arrangements entered into are beyond criticism, and said that he was not so much concerned with the task of defending them as with that of explaining them, and that their wisdom, therefore, was open to discussion during the Conference. He said that he felt it his duty, however, to state that, in the view of all three members of the Committee, the arrangements, whether ideal or not, were the only ones which in actual practice could achieve their objects at the present time. The subsidies, Lord Gorell said, are necessary, because we are asking firms to compete with the French subsidies, and because we deem it essential that the British cross-Channel services shall be maintained. Regarding the suggestion of an air service across the Irish Channel, Lord Gorell stated that, personally, if it were in any way financially possible, he would like to see this established, but at the same time, it would, he said, be misleading to suggest that he saw any definite hope of its establishment in the immediate future.

#### Imperial Air Services

Passing on to broader aspects of aviation, Lord Gorell proceeded to deal with the question of Imperial Air Services. He pointed out that the aeroplane stages must necessarily be a good deal shorter than those on a route flown by airships. With the number of relay stations, emergency landing grounds, and other ground organisation necessary, such a route could not yet be a commercial proposition, and that, therefore, the establishment of such routes must be primarily undertaken by the Royal Air Force. From the point of view of the Government, he said, although the desirability of opening the routes to commercial services should be constantly borne in mind, the first necessity is to effect the linking up of the different areas of R.A.F. squadrons. When that has been effected we shall have stations established at convenient stages, in connection with which, or beside which, civilian stations can be successfully established and economically protected. Lord Gorell further stated that the process of linking up the stations established for service purposes is steadily continuing, and that therefore the time may not be so far distant when an Imperial route for civilian and commercial purposes can be established with a prospect of commercial success.

#### Air Mails

On the subject of air mails, Lord Gorell had a good deal to say. He prefaced his remarks on the question of air mails from and to this country by a brief statement of what has been done in the matter of air mails abroad. The United States Government was the first, and for some time the only, State which itself operated an air mail service. Nearly 45 million pieces of mail were carried in the year ended June 30, 1921, and this was in addition to large

quantities carried on other routes by non-subsidised companies. In the United Kingdom, during the 12 months ended September 30 last, 102,240 letters were posted for outward transmission by the cross-Channel air services, and of these 63,340 were for Paris. The numbers carried in the opposite direction were rather less. The first necessity, Lord Gorell said, in any system of transit, must be the regularity of service, and although this regularity has to a great extent been gained in that 95 per cent. of the flights on the London-Paris mail service between April 1 and September 30, 1921, were completed in less than four hours from the scheduled time of starting, no very substantial advantage, he thought, was gained from the point of view of the General Post Office, by the more speedy transit of mails across the Channel by day flights.

For the cross-Channel air mails, Lord Gorell thought it would be necessary to develop night flying, as, if a business man could post his letters in the evening and be assured that they would reach his French correspondent early next morning, he would readily see the advantages of the cross-Channel air mail service.

Regarding the attitude of the General Post Office towards air mails, Lord Gorell stated that he had not found that the G.P.O. deserved some of the more harsh criticisms which have been passed upon its officials. He thought it obvious that if the regularity can be assured they will take advantage of the service, just in the same way as in the past they changed from sending mails by road when the railways provided a speedier and surer method. It seemed to him, he said, that there were two sides to be considered. As long as it costs more to send a letter by air, the G.P.O. must, in addition to the question of regularity, be assured that there are a sufficient number of people who are willing to pay that extra sum in order to obtain more rapid communication. The G.P.O. would not be justified in entering into new arrangements if the public response is inadequate. He thought it rather indicative of the lack of general public interest that far fewer letters are sent from London to Baghdad by air than are sent from Baghdad to London. He thought that if once it can be shown that mails can be borne by air at approximately the same charges as they can be borne by land and sea, and a good deal quicker, that will be the method which the G.P.O. will naturally adopt. Regularity and cheapness were the two pillars, Lord Gorell considered, upon which must rest any real development of the transit of mails by air.

#### Civil Aviation and Commerce

On the question of the relations between civil aviation and commerce, Lord Gorell thought it was hardly too much to say that at present these were distinctly poor. He thought that at present there is no real sign that business brains in this country have taken into serious consideration the degree to which the air may be utilised for the purpose of their business, and he mentioned as one example the great industry comprised by the word journalism. He expressed surprise at the fact that some of the great newspapers have not regularly employed the aeroplane in connection with their early editions. We shall, he said, really only begin to make decided progress when the business community begins to go seriously into the cost and practicability of meeting their constant need of the speediest means of transport by making use of the air.

#### The Policy of Subsidisation

On the general question of aerial development, Lord Gorell said that he had noticed that critics of the Government attitude had drawn a distinction between promise and performance. Probably, he said, the action of any Ministry falls short of what enthusiasts consider desirable, but he thought that the critics had wished the Government to do a great deal more in ways that would have cost the taxpayer a great deal more money, and he was sure that no degree of public support would be given to a proposal that we should spend a million pounds on this object. Lord Gorell stated that he had been much interested to read in a recent article by a French writer, written in defence of the results of the Paris Aero Show, against some of the criticisms which had been passed upon it, some striking admissions of the errors into which the earlier policy of subsidisation had led the French Government, and even of the present regulations this French writer had some significant things to say. For instance, of the petrol subsidy, he says, "the new subsidy stifles initiative in the firms concerned, since they are free from all anxiety in regard to the price of petrol." He further states, Lord Gorell said, that "the present regulations have been drawn up more with an eye to existing machines than to future construction." The Under-Secretary of State for Air, therefore, thought that the Government would require

much greater justification than a mere comparison of figures before they engaged in a similar policy.

#### The Civil Aviation Advisory Board

OWING to the importance of the decision, we give the part of Lord Gorell's paper dealing with the establishment of the new Civil Aviation Advisory Board in full.

"It has been decided," Lord Gorell said, "that on the difficult problems in connection with the development of civil aviation, as a whole there is need for a body acting in close relations with the Air Ministry, and at the same time representative of the great interests concerned, to advise generally upon such development, or to report specifically upon any question which may be referred to it. The Advisory Committee on Civil Aviation, presided over by Lord Weir, gave very distinguished help in the past, and it has now been thought well to perpetuate the basic idea underlying the formation of that Committee. There will, therefore, be set up a body which will be known as the Civil Aviation Advisory Board, the Chairman of which will be the Under-Secretary of State for Air, and the membership of which will comprise the Controller-General of Civil Aviation, the Director-General of Supply and Research, together with, it is hoped, representatives of the General Post Office, the Associated Chambers of Commerce, Lloyd's, the Royal Aeronautical Society, the Air League of the British Empire, the Royal Aero Club, and the Society of British Aircraft Constructors; in addition, the most convenient way of securing representation of the Dominions and Crown Colonies is being considered, and they will, in any event, be consulted whenever the interests of any are concerned. I am further authorised to say that the Secretary of State has decided to refer to this Advisory Board, as the first subject upon which he desires its recom-

mendations, the question of the cost and practicability of an Imperial Air Mail Service.

"There will be many other questions upon which it is believed that the recommendations of such a Board, which it is intended shall meet with some regularity, will be of the utmost value to the Air Ministry. Possibly, one direction in which it can give general assistance will be that to which I have referred more than once in this paper, and upon which I lay the greatest emphasis of all. I cannot express it better than by quoting the words used by Mr. Holt Thomas in a letter published in *The Times* on November 25 last, immediately after his experience of the first International Congress on the Navigation of the Air in Paris. He wrote:— 'Convinced as I have been for the last fifteen years of the importance of aviation to this country, I return from France, with a still stronger conviction that this country must, by hook or by crook, be led to appreciate the enormous importance of aviation, and especially, at this time, of civil aviation, to the British Empire.' With that conviction I express myself in entire agreement; but the creation of this conviction, I must repeat, is a task in which a Government Ministry can to some extent assist, but which it cannot successfully itself undertake. That must be done by the recognition of the possibilities of the air by the business community. I am certain that passenger traffic, important as it is, is not so essential to the health of civil aviation as an industry as the transport of goods, and if we are to take advantage of the great exploits performed by British airmen in the War, and of our needs and opportunities as an island Empire, we do require first and foremost the establishment in the public mind of the realisation of aerial commercial possibilities."

## NOTICES TO AIRMEN

### Henlow Aerodrome: Obstructions

Two 70-ft. wireless masts have been erected approximately 150 yds. from the southern side of the landing ground at the Royal Air Force Aerodrome, Henlow (Lat. 52° 01' N., Long. 0° 18' W.).

A red streamer will be flown from the top section of each of the masts.

Pilots who may have to land at this aerodrome should, herefore, be careful to avoid these masts. (No. 10 of 1922.)

### Wireless D.F. Stations: List and Borkum Re-opened

THE Direction Finding stations at *List* and *Borkum*, which have been temporarily closed, are now open again for service. Paragraph 1 of Notice to Airmen No. 111 of 1921 is accordingly cancelled.

(No. 11 of 1922.)

### Belgium: Obstruction at Haren Aerodrome; temporary Closing of Haren R/T Station

CERTAIN work (levelling, etc.) is in progress on the surface of the southern half of Haren aerodrome (Lat. 50° 53' N., Long. 4° 25' E.). Pilots should, therefore, keep to the north of the white circle when landing. (See plan in Notice to Airmen No. 139 of 1920.)

(No. 12 of 1922.)

### Croydon Aerodrome: Removal of Aerial Lighthouse

1. THE Aerial Lighthouse at present situated in the S.W. corner of Croydon aerodrome will cease to operate as from 0800 on Friday, January 27, 1922, and will be removed from

the aerodrome prior to its being installed on a fresh site at Tatsfield, Surrey.

A further Notice will be issued before the lighthouse is put into operation at Tatsfield.

2. The Aerial Pilotage Light will continue to operate as notified in Notice to Airmen No. 64 of 1921.

3. Cancellation.—Notice to Airmen No. 99 of 1920 is cancelled.

(No. 13 of 1922.)

### Hourly Weather Messages on Civil Air Routes

1. The hourly meteorological reports for aviation issued by W/T from the Air Ministry are being sent in revised code forms adopted by the International Commissions for Weather Telegraphy and for the Application of Meteorology to Aerial Navigation at the meetings held in London in September, 1921. While the new code forms differ from the one formerly in use, the specifications of the code figures remain practically unchanged, the only important alterations being found in the specifications of visibility and of speed of low cloud.

2. Reports are issued daily, Sundays included. Particulars (No. 14 of 1922) should be obtained from the Air Ministry.

(No. 14 of 1922.)

### Aerodromes for Civil Use: Amendments

NOTICE to Airmen No. 1 of 1922 (Consolidated List of Aerodromes) is amended as follows:—*List C.—Licensed Civil Aerodromes.*—Added:—Cobham, Tartar Hill.

The following should be deleted:—Chesterfield, Caushouse Farm; Weymouth, Lodmoor.

(No. 16 of 1922.)

### R.A.F. Boy Mechanics

THE Civil Service Commissioners announce that an open competitive examination for the entry of boy mechanics into the Royal Air Force will be held in London, Edinburgh, Birmingham, Chatham, Plymouth, and Portsmouth on May 12. The limits of age are 15–16½ on July 1, 1922. Regulations and forms of application will shortly be ready for issue, and will be sent in response to requests received by letter addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1, on or after February 8.

### "Hopping Off the Cliff"

ACCORDING to stories told by the natives of Hawaii of to-day, it is learned from Honolulu, so writes a contributor to *The Motor* (South Africa), that all the thrills of flying were enjoyed by Hawaiians centuries ago. Their ancestors secured their aerial excitement by jumping off cliffs into the sea in home-made aeroplanes. They made a regular game of it, known as "lele pali," or "jumping from the cliff." It was

played up to a hundred years or so ago by natives who lived near groves of loulou palms, near high cliffs overlooking the sea. The game was played with large contrivances built of light but stout sticks and overwoven with loulou palm leaves. Several of these affairs were made ready, the Hawaiian "aviators" took their seats and were pushed over towering cliffs. The adventurer who remained longest in the air was the winner. Frequently an aeroplane, owing to the carelessness or over-excitement of its "pilot," executed a nose-dive after the fashion of the twentieth-century machines. The only damage was the loss of the game. Old Hawaiians say that their flying men were exceptionally skilful. The only means they had of guiding their crude appliances was to shift their weight to maintain balance as they zigzagged down toward the sea. A fleet of outrigger canoes was anchored off shore to pick up the sportsmen and retrieve the "planes." Exceptionally daring Hawaiians, it is said, often hopped off thousand-foot cliffs on the mainland.

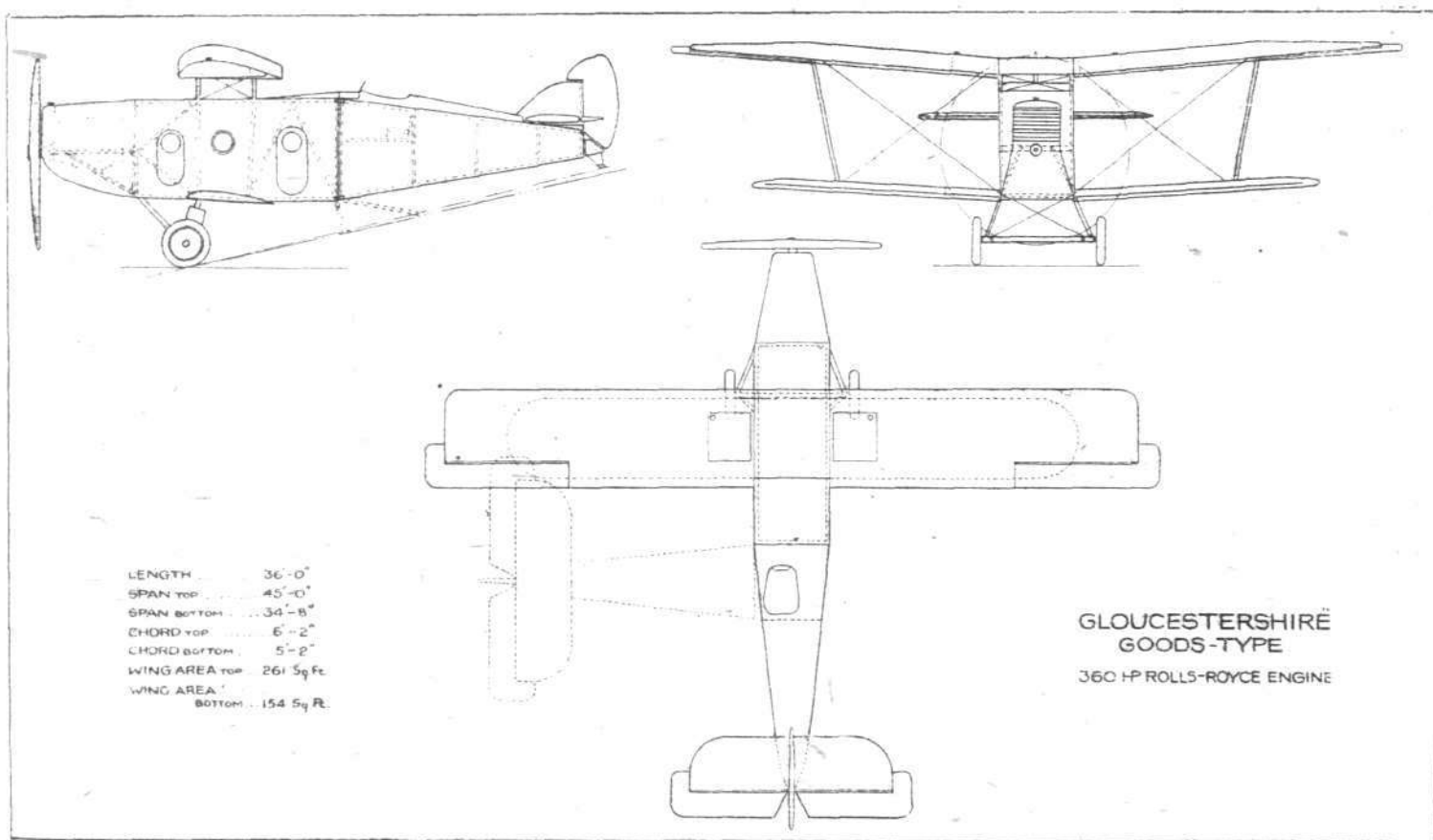


# A GLOUCESTERSHIRE GOODS TYPE COMMERCIAL AEROPLANE

## Rolls-Royce "Eagle" Engine

WHEN civil aviation was first attempted in 1919, the machines used were, without exception, War types which had been variously modified to meet, in some measure, the altered requirements. This they did to a limited extent only, and it is now becoming more and more evident as experience is gained that the "general utility" machine is not the solution of the problem, and that from now onwards the tendency will be more and more towards specialised aircraft. For a certain route, and a certain type of cargo, there will always be types which possess certain features that make them particularly suitable, although these features may, and probably will, have been attained at the expense of others which are not, however, so necessary for the particular purpose. Thus we shall see certain types developed for mail-carrying, others especially suitable for passenger work, and, let there be no mistake about it, certain types designed specially for carrying goods. At first the division into types may not be very marked, but it is already beginning to be noticeable, and will become more and more so as time goes on, and it will be the

of the chord. Although of relatively high lift, this section has a good L/D ratio (nearly 18), and its thickness is such as to give ample room for spars of light construction. The lower plane will be of ordinary medium-lift section, and is of smaller area than the top one. The reasons for adopting this arrangement are various. The cantilever monoplane, with thick, high-lift wing, is necessarily of considerable span, so that, for the same landing speed, a biplane structure will be more compact. If both wings are of the high-lift type, the gap between them has to be fairly large to avoid too great biplane interference. Also, the L/D of high-lift sections is usually inferior to that of the medium-lift aerofoils, and by employing one plane of ordinary section and one of high-lift section, the overall L/D of the biplane is increased. It appears possible that such an arrangement might also be used for obtaining a certain amount of longitudinal stability, although in the Gloucestershire machine no attempt has, we understand, been made to attain stability in this way, the usual tail plane arrangement being relied upon for this purpose.



THE GLOUCESTERSHIRE 1,600 LBS. GOODS-CARRYING AEROPLANE. General arrangement drawings.

designer who is best able to anticipate the requirements of future types who will be in the most favourable position for meeting them.

It might have been thought that the day for the goods-carrying aeroplane is not yet, but we have the word of no less an authority on the subject than Sir Samuel Instone for it that goods machines specially designed for the work are required. That being the case, it is extremely interesting to learn that that progressive firm, the Gloucestershire Aircraft Co., Ltd., of Cheltenham, has actually completed the design for a machine of the goods-carrying type, which has several novel features, and which has been designed with commercial conditions in view the whole way through.

As the accompanying drawings will show, the new Gloucestershire machine is a tractor biplane, fitted with Rolls-Royce "Eagle" engine. The wings, it will be observed, are of unequal area, and an interesting innovation is found in the employment of different wing sections for top and bottom planes. The section of the top plane is that known as air-screw 4, which has a maximum lift coefficient of about 0.77 absolute, and a maximum top camber of 12.18 per cent.

Although a fairly large machine, there is to be only one set of struts on each side. No doubt, this reduction in bracing has been rendered possible largely as a result of the employment of a thick top plane. Another advantage of the biplane bracing over the cantilever monoplane is, Mr. Folland, the designer of the machine, points out, that the incidence bracing provides a duplication of bracing in case of fracture of one of the lift wires, whereas in the cantilever monoplane no such duplication exists.

Apart from the unusual wing arrangement, the new Gloucestershire machine is of interest on account of the provision made for easy loading and unloading of bulky goods. The fuselage, which is of rectangular section, is built in three separate units: the front unit is the engine housing, the middle unit forms the cabin, and the rear unit is the aft portion of the fuselage, carrying the tail and tail skid. At the rear end of the cabin, a hinged attachment is provided for the rear portion of the fuselage, so that this can be swung out laterally, thus giving access to the cabin through an opening of approximately the full size of the cross section of the fuselage. A partition hinged at the bottom, folds down to form a

gangway up to the floor of the cabin, along which trolleys, with the goods to be loaded or unloaded, can be wheeled. Jacks under the rear corners of the cabin prevent the machine from tilting over backwards.

Although ample space for loading and unloading is thus provided by this rear door, the machine might be used for less bulky packages, which would not necessitate such a large opening. Ordinary doors have consequently been provided in the sides of the cabin, one in each side aft, and a third in one of the sides, forward of the wings. Through these smaller packages can be loaded, avoiding the necessity of "breaking" the fuselage. The cabin space available is large, 11 ft. 8 ins. long, by 5 ft. 6 ins. high, by 4 ft. 2 ins. wide.

Constructionally, the fuselage will be of the composite type. That is to say, the front portion (engine unit) will be largely of steel tubing, with aluminium covering. The cabin will have spruce longerons, and three-ply covering, no other bracing being employed, so as to leave a clear space inside the cabin. The rear portion of the fuselage will be of the ordinary brace girder type, but with steel tube longerons and struts.

Apart from other advantages, the employment of a thick top plane is useful in providing ample space for mounting of tanks inside the wings, thus obtaining the benefit of direct gravity feed to the engine without unsightly tanks projecting above the top surface of the wing. In the present machine, there are two tanks, one on each side, each containing 43 galls. of petrol.

The undercarriage is to be of the simple V-type, with the front struts (steel) cross-braced, with streamline wire, and the rear ones telescopic, to give the necessary springing. The latter will be by rubber cord, and a pneumatic damper gear is to be fitted.

The engine, a Rolls-Royce "Eagle" of 360 h.p., will, as already stated, be mounted in front as a detachable unit,

four lugs being provided for securing it to the cabin. By suitably designing the engine controls and petrol leads, the whole engine unit, with its nose radiator, can be changed for a new one in a very short time. For inspection, and minor adjustments, the engine is made accessible by designing the engine cowl somewhat after the fashion of the bonnet of a motor-car, quick-release safety catches being used for fastening the cowl in place.

As regards the controls, these are to be of standard type, with joy-stick for elevators and ailerons, and a foot bar for the rudder. No cables will, however, be used in the controls, all movements being transmitted by rigid control rods, or tie rods, running in suitable guides. In this manner, the wear and tear and the amount of attention usually associated with control cables will be avoided. Ball-bearings will be used extensively so as to render the controls easy to operate, and to lessen the physical fatigue of the pilot on long journeys.

The tail plane will be of the trimming type, with hinges on the front spar, and a worm gear, similar to that used on the Nieuport "Night-hawks," will be incorporated, in the support of the rear spar so as to allow of trimming the tail during flight.

Following are the main characteristics of the Gloucestershire "Goods Plane": Length o.a., 36 ft.; span (upper), 45 ft.; chord (upper), 6 ft. 2 ins.; span (lower), 34 ft. 8 ins.; chord (lower), 5 ft. 2 ins.; area (upper), 261 sq. ft.; area (lower), 154 sq. ft.; total wing area, 415 sq. ft.; structure weight, 1,936 lbs.; weight of engine, radiator, water, piping, accessories, and propeller, 1,175 lbs.; petrol, 628 lbs.; oil, 70 lbs.; pilot, 180 lbs.; goods load, 1,600 lbs.; total loaded weight, 5,589 lbs.; wing loading, 13.5 lbs./sq. ft.; power loading, 15.5 lbs./h.p.; useful load per h.p., 4.45 lbs. at 104 m.p.h.; 5.7 lbs. at 92 m.p.h., maximum speed, 104 m.p.h.; speed at three-quarter throttle, 92 m.p.h.; climb to 10,000 ft. in 30 mins.; ceiling, 14,000 ft.; air endurance, 4½ hrs. at cruising speed of 92 m.p.h.

## LONDON TERMINAL AERODROME

Monday Evening, February 6, 1922

THE outstanding event of the week has, of course, been the visit of the members of the Air Conference to the aerodrome today. They arrived by special train and motor-car, and numbered some 400. The train was run straight into the factory premises, now leased by the Disposal Co., in order to show members the ease with which the aerodrome could be reached when this factory site is used as the departure station for the Continent. It is rather a pity, in a way, they were not made to travel down by the ordinary methods. It would have shown them what an outlandish place the aerodrome really is when no special arrangements are made. The sooner there are arrangements for some reasonable method of getting to the aerodrome, either by train or omnibus, the better it will be for civil flying. At present, the inaccessibility of the aerodrome from Town is doing more than anything else to hamper commercial aviation.

There was quite a good muster of aeroplanes on view, and the thanks of the Air Ministry are certainly due to the manufacturers who sent 200 machines in order to make the visit a success.

The fact was commented upon that out of twelve machines lined-up for inspection six were of De Havilland design and construction, a striking tribute to the enterprise of this firm.

Flights for the visitors were provided in the Vickers-Vimy, one of the "D.H.18's," the Napier-Bristol, a "D.H.9c.," and the Jupiter-engined Handley Page.

### Pilot's Praise of the "Jupiter" Engines

MR. OLLEY, who flew the Jupiter-Handley during the conference visit, and also from Bristol, is loud in its praise. He is delighted with the smooth running of the air-cooled radials, and says they are just like a couple of turbines. How they will stand up under strenuous commercial service conditions now remains to be seen.

The Disposal Co. was again well to the fore, and put several machines into the air in exhibitions of stunt flying. There were also one or two R.A.F. machines on view. The Gloucestershire Aviation Co.'s "Mars I" attracted considerable

attention, and Mr. James was flying her in the afternoon.

The "D.H.29" monoplane made its first appearance at the air station on Friday, and a stream of aerodrome officials passed into the Handley Page sheds, where it was housed, to inspect and comment on the machine.

It is understood that the Daimler Hire air service is to commence operations on April 3. According to the latest reports, they have acquired two "D.H.4's," and expect, it is said, to have two others allotted to them by the Air Ministry. The pilots at present engaged are Messrs. Hinchcliffe, Milnes, and Reeves. Mr. Hinchcliffe was chief pilot of the K.L.M. before joining the new company, and Messrs. Milnes and Reeves are old Aircraft Transport and Travel pilots.

### The K.L.M. Monoplane Service

THE date of the re-opening of the Amsterdam-London service is not, as yet, definite. It seems almost as variable as the weather, changing from day to day. Mr. Plesman, the general manager of K.L.M., was over for the air conference, but was uncertain as to the date of resuming operations. Meanwhile, there is activity in the office of the K.L.M., but only, so far, in the matter of decorations.

Mr. Earle, of "Air Express," the booking agents, was at the aerodrome during the week. There appears to be a general revival of interest in flying all round, in anticipation, no doubt, of the increased activities which are expected in about a couple of months' time.

The new weather-board has, at last, been erected opposite the traffic-movement board, and this morning there was feverish activity in order to get it finished in time for the arrival of Air Conference visitors.

Captain Muir, of the Surrey Flying Services, tells me that arrangements for their "air-taxi service to everywhere" are now well advanced, and that by the end of next month they will be able to supply machines at a moment's notice. It is the intention of this firm to make a speciality of air-taxi work between Croydon and Southampton and Liverpool, in connection with the arrival and departure of trans-Atlantic liners.

### Air Mail Stamps.

THE special stamps for use with the French Air Mail service to Morocco, referred to in our issue for January 12 last, have now made their appearance. It has been decided by the Czecho-Slovak Government that a special set of stamps shall be used for mails carried on the air services running in that country. Some time back the ordinary

postage stamps overprinted with a design showing an aeroplane were used for this purpose.

### The Coupe Deutsch, 1922

FOR 1922, it has been decided by the Aero Club of France that the Deutsch Cup shall be contested on September 22, over a distance of 300 kilometres, on a 50 kilometres' course. The actual circuit has not yet been fixed.

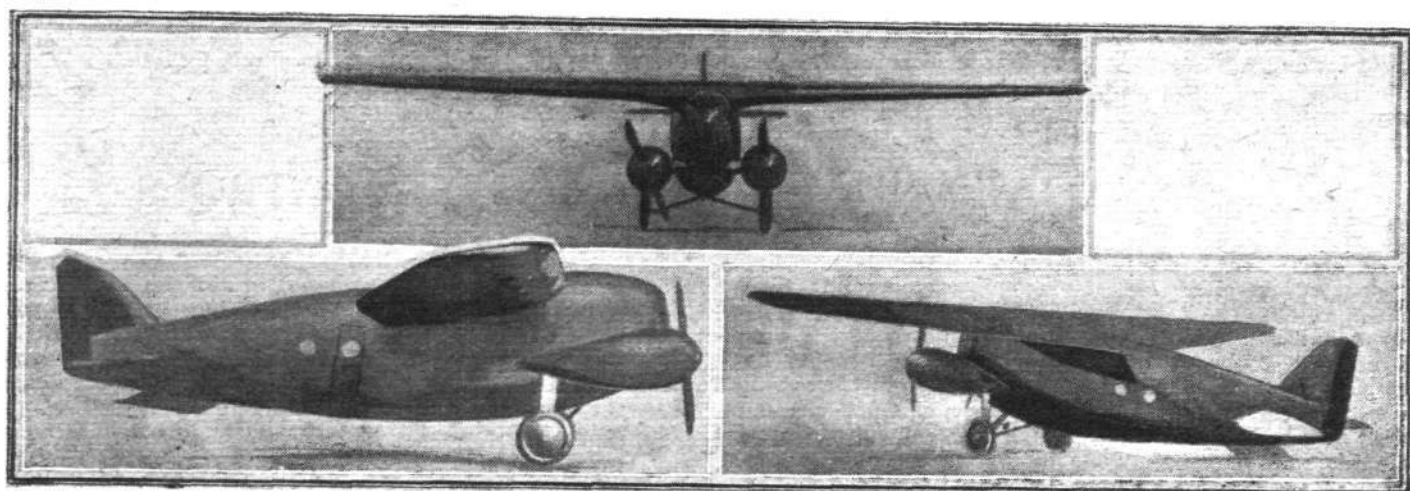


## THE ERNOUL COMMERCIAL MONOPLANE "F.A.T.M.A. 2"

An Interesting French Machine now being Built

At the Paris Aero Show, held in the Grand Palais, during November last, there was exhibited, on the stand of *Aero Transports Ernoul*, a large scale-model of a very interesting commercial monoplane which is now being constructed for this firm at Toulouse. It is to be regretted that the actual machine could not be finished in time to be exhibited, as the model appeared to indicate that the machine will be of more than ordinary interest. M. Ernoul is head of the firm which has been operating the Bordeaux-Toulouse-Montpellier air service, and which it is proposed to extend during this summer by a line running from Bordeaux to Marseilles, Geneva and,

seating accommodation for eight passengers, and, it is stated, that folding berths will be fitted so that passengers making long journeys will be able to lie down for a rest. It is difficult to see how room can be provided for sleeping accommodation in the space available, but possibly the passengers will take it in turns. The cabin is lighted by windows in the side, and as there is no lower plane, the view obtained is excellent. The pilot and a passenger or engineer are placed in front of the leading edge of the wing, and as the nose of the fuselage is very narrow, to clear the propellers, the pilot has an extremely good view forward.



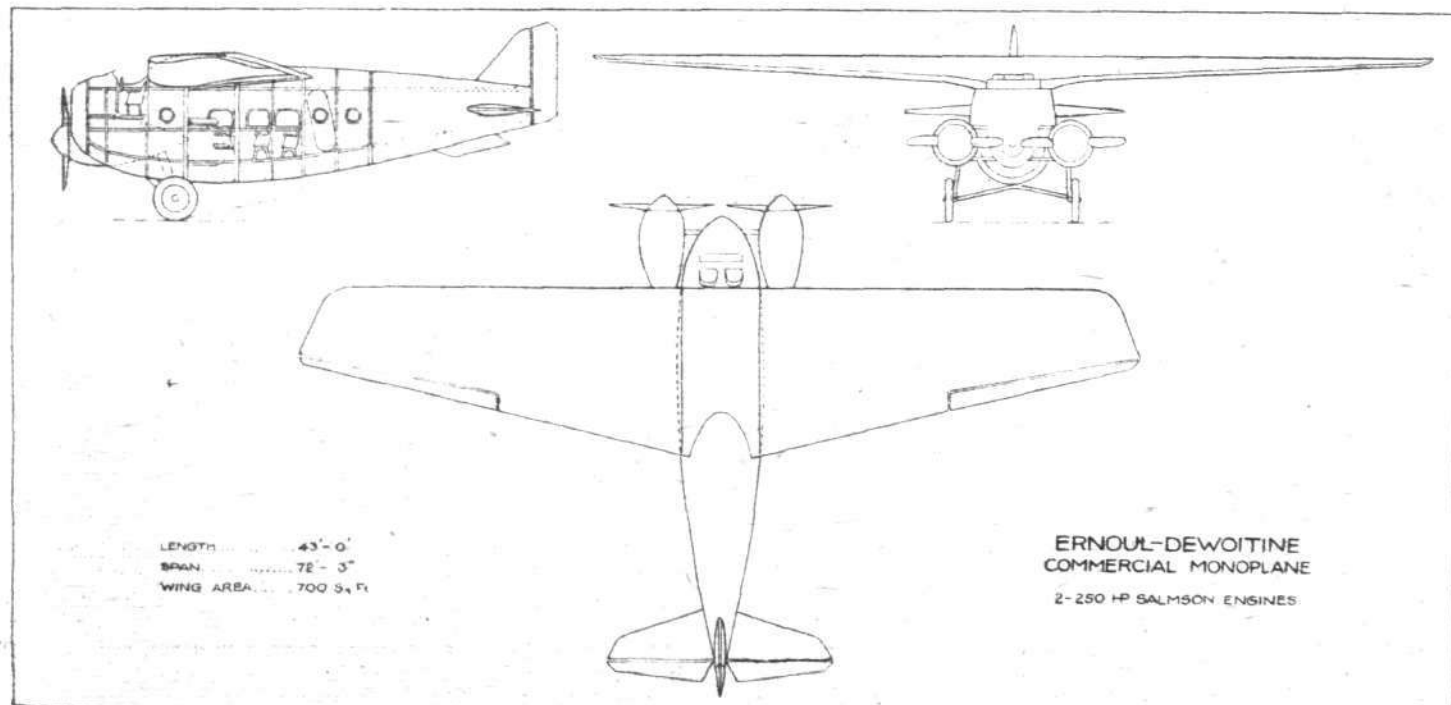
THE ERNOUL-DEWOITINE MONOPLANE: Front, side and three-quarter rear views of scale model.

possibly, Constantinople and the East. It is considered that for this service a machine of high-speed and good range is essential.

The Ernoul commercial monoplane has been designed by M. Dewoitine, and, as will be seen from the accompanying illustrations, is of somewhat unusual design. It is a monoplane of the cantilever type, *i.e.*, without external wing bracing, and resembles the "D.H.29," in having a pronounced taper to its wing. In other respects, however, it has no resemblance to that machine. We have no information relating to the wing section used, but judging from external appearances, it is one of the Göttingen sections, possibly No. 441.

The fuselage, which is of monocoque construction, has a good streamline form, and every effort has been made to reduce resistance to a minimum. The large cabin has

By far the most interesting feature of the "FATMA" is, however, the placing of the engines. The arrangement was first suggested by Herr Dornier, of the Zeppelin company, photographs of a wind tunnel model of whose machine were published in *FLIGHT* of May 19, 1921. Briefly, the mounting of the engines consists in two cantilever beams, streamlined so as to reduce resistance, springing out laterally from the fuselage near the nose, and carrying on their outer ends the two engines. The main object of this arrangement is, of course, to get the two engines as close together as possible, so as to reduce the turning moment set up when one engine stops. By placing the engines well forward, and narrowing down the nose of the fuselage, the engines need be separated by little more than the diameter of the propellers used. It might be objected that for such a small machine, it is unnecessary to have two engines. While that is to a certain extent



THE ERNOUL-DEWOITINE COMMERCIAL MONOPLANE: General arrangement drawings.

true, it must be pointed out that the machine is required to have a good performance, high speed, good reliability (owing to the difficulty of finding suitable landing grounds on the route contemplated) and long range. Thus, it might be rather a tax on a single engine to provide the necessary power for long periods. Furthermore, the designer may have been handicapped by the lack of a suitable single power unit, and with two engines placed so close together it should be possible—which is far from always the case with ordinary twin-engined machines—to fly on one engine only. In fact, the calculated performance figures for this machine indicate that with only one engine working (although at its full power, of course) the speed is 87 m.p.h.

A very practical advantage of the Dewoitine design is found in the ease with which the engines can be "got at" and overhauled, or replaced with new ones. In fact, we do not think we have ever seen a machine in which this can be so easily accomplished. As the engines are well forward of the leading edge of the wings, a tackle can easily be employed for lifting them off their bearers, or, if necessary, the entire engine nacelle can be lifted off and replaced. In the

present design, the tanks are placed in the nacelles, behind the engines, but it would be an easy matter to transfer them to the top of the wing, and thus provide direct gravity feed. Altogether, it appears to us, that the Ernoul firm has chosen very wisely in adopting the Dewoitine design. There are few French designs which we like better, and this form of engine mounting, although it is probably somewhat heavier than the usual placing of the engines on the wings, is much more what operational firms are really wanting than are those of the majority of machines in actual use. There is, of course, no reason why it should not be adopted for biplanes also.

The main characteristics and estimated performance of the "FATMA," are as follows: Length o.a., 43 ft.; span, 72 ft. 3 ins.; wing area, 700 sq. ft.; weight empty, 3,590 lbs.; weight of fuel, 1,120 lbs.; useful load, 1,870 lbs.; total loaded weight, 6,580 lbs.; wing loading, 9.4 lbs./sq. ft.; power loading (on base of 500 h.p.), 13.2 lbs./h.p.; maximum speed at 6,500 ft., 127 m.p.h.; speed on one engine at 6,500 ft., 87 m.p.h.; landing speed, 46 m.p.h.; ceiling, 10,000 ft.; engines, two 250 h.p. Salmson C.U.Z.9, geared down; range, with full load, about 600 miles.

## CANADA AND AERIAL FOREST PATROLS

UNDER the Canadian Directorate of Flying Operations, aircraft is being used in various directions with ever-increasingly satisfactory results. Forest reconnaissance and timber cruising in Ontario forms one important scheme now nearing completion over certain blocks of land north of the Trans-Continental Railway. But the most direct benefits have accrued under the system of patrolling for forest fires which have been carried out in the Province of Quebec and on behalf of the Forestry Branch of the Government of Ontario. Valuable work has been done by aeroplanes and seaplanes, and vast areas, which in previous years have been damaged by fire owing to their inaccessibility, have been saved from total destruction. On one occasion a big fire was brought to the notice of the Crow's Nest Forest Reserve on Sunday, August 28, and kept under close observation from that time until finally extinguished on Thursday, September 8. This fire was started as a result of high winds blowing embers across the main range of Rockies into the Alberta timber area from a fire in the Alexander Valley, British Columbia. By the continuous reports furnished by aircraft watching these operations, the Forestry Branch were able to be warned well in advance of the course the fire was taking, and the danger lying ahead that would be inevitable should the fire cross towards certain areas.

After the fire had been abated, a most complete survey was brought back as to the exact area burnt, and very valuable information of the surrounding country.

Dealing with the work of the aeroplanes, the Forest Supervisor of the District in a long letter and report becomes enthusiastic in connection with a demonstration flight of 1,000 miles, entailing a complete circuit of Lake Winnipeg, Winnipegosis and part of Lake Manitoba and as far north as Pas and Cumberland House, culminating in the following expression:—

"More than anything I had previously imagined, this trip impressed me with the future of the Air Service in the Northern Territory. I obtained a grasp of the topography and water system in the Saskatchewan Valley of which I had not had any conception. I have had considerable experience in mapping in territory from the canoe, and feel satisfied and more than ever impressed with the conviction that the only way that the Northern Territory can be mapped is by the camera from the air."

By way of further demonstration of the very valuable help of aeroplanes in exploration, at the request of the Dominion Parks Branch, Department of the Interior, an aeroplane was despatched to Jasper Park, in the heart of the Canadian Rockies. In the seven hours' flying over the parks the Superintendent claimed to have travelled a greater distance and seen more country than he could possibly have done by trail in six weeks to two months' hard travelling. The following results of the operation were reported as worthy of special note:—

(1) Several hitherto unknown lakes and river valleys were discovered and accurately located, and valuable information secured as to the possibility of tracking new trails over such regions.

(2) "Close up" reconnaissances were made of well-known peaks, valleys and mountain passes, and photographs were taken of the same.

(3) Valuable information was obtained as to the extent and character of the timber in various portions of the park and best methods to adopt to ensure adequate fire protection.

(4) On several occasions messages were dropped to construction crews working on new trails, who were ordinarily at least two days' travel from the nearest telephone communication.

These are but a few of the practical results so far obtained. There are innumerable directions in which further progress is possible and is being achieved, such as the investigation of mosquito-breeding areas, geological surveys, etc. In regard to the mosquito plague, reconnaissance flights by aeroplane have been carried out for representatives of the Entomological Branch, who were able, by direct observation as well as subsequent study of the aerial photographs taken on each flight, to accurately map the limits of the inundated sections.

The difficulty in the past has been to accurately determine the extensive areas, comprising sometimes many thousands of acres, which are subject to flooding at times of high freshet. On such occasions it has been found that serious outbreaks of the mosquito pest invariably occur. It has, in fact, been found impossible to obtain satisfactory data by means of the usual surveys by motor-car, on foot or by boat.

All of which tends to force recognition of the fact that aircraft are something more than mere war machines—they are highly specialised "weapons" for benefiting the human race.

### Aviation in Siam

FROM a report upon commercial matters in Siam, up to the latter part of 1921, by Mr. J. Crosby, C.I.E., just issued by the Department of Overseas Trade, it is stated that good work is being done by the aviation branch of the Siamese Army, which has established an aerodrome in the neighbourhood of Bangkok. Flights have been undertaken to Korat and thence to Ubon, in the north-east, and to Chantaboon in the south-east. Siamese airmen have flown to Battambang (in Cambodian territory), whilst French military aviators have made the journey via that place from Saigon to Bangkok.

It is to be borne in mind that aviation in Siam is in the hands of the military authorities. Civil aviation is unknown as yet, and no very hopeful inducements for its inauguration can be said to exist. Should Bangkok ever become a stage upon one of the great commercial air routes projected for

the Far East in the future, civil aviation in this country may possibly be made remunerative. In the meantime, the practical utility of flights by air is likely to be confined to such matters as the despatch of official mails or of medical aid, when needed, to the less accessible portions of the kingdom.

### Air Travel by Cinema

A NEW scheme has been devised by the Lep Aerial Travel Bureau to display to prospective air passengers the advantages of travelling to the Continent by air. A small daylight cinema of a new type has been erected in the bureau in Piccadilly Circus, and films depicting the Customs examination, start from the aerodrome, scenes en route, etc., etc., are shown, while an official explains the film and points out the benefits to be obtained by using the newest method of travel.



# THE USE OF LIGHT AS AN AID TO AERIAL NAVIGATION\*

By LIEUT.-COL. L. F. BLANDY, D.S.O., R.E.

In his opening remarks the author stated that he proposed to deal primarily with the use of light in connection with commercial aviation, but passing reference was made to the anti-aircraft searchlights employed during the War.

Turning to peaceful flying, he first referred to lights carried on aircraft—internal and external. In connection with the former, which are used for working the craft, and for the convenience of the passengers, a description was given of the system employed on "R.36." This ship is lit internally with ordinary 12-volt metal filament lamps, from current supplied by five generators, one in each of the engine cars, belt-driven from the main propeller shaft, and charging a floating secondary battery of 40 amp./hrs. Batteries and generators are laid out in two systems, those in the four wing cars supplying current to the passenger, control, and wing engine cars and internal navigation lights. The stern car generator supplies current to this car, stern navigation and after corridor lights. All generators are coupled through switches and fuses so as to admit of the isolation of any one generating unit, and all cables are run through bonded aluminium troughs; switch boxes and cable exits are rendered gas tight. (Further details of the installation were given, and a wiring diagram was shown). The author stated that the "D.H.34" and "D.H.32" commercial machines are to be provided with internal lighting. Brief mention was also made to the lighting of instruments on certain machines.

With regard to the external lighting, in accordance with the International Convention for Aerial Navigation, after enumerating the requirements laid down, the various problems arising in connection with same were dealt with. It was pointed out that, perhaps, practical experience would have to solve the problems confronting us.

The importance of eliminating any "fringe angle" was explained. This can be partially effected by screening, a similar method to that employed for port and starboard lights on ships being an ideal method. There are, however, constructional and aerodynamical difficulties in applying this method to aircraft. Careful experimenting has led to a design of screen which is a compromise, giving a uniform intensity of beam throughout the prescribed dihedral angle, and limiting, as far as possible, the fringe angle. Dioptric lenses or reflectors have not been experimented with, as a satisfactory solution has been found with the screen.

Difficulty has been found in obtaining the correct formula for the tinting of coloured glasses, the usual signal red and green not giving satisfactory colours when high intensity filaments are used. The Board of Trade and Air Ministry are now working on this problem. The International Convention rules may have to be modified. It was explained, now that speeds of 200 m.p.h. have been reached, how little time there is for the pilot to act in avoiding a collision.

Another form of light carried on aircraft is that to facilitate landing, especially in emergency, on an unilluminated area. One of these, the Holt wing tip flare, consists of an inflammable aluminium composition, suitably attached to the underside of the wing tip, and electrically ignited from the cockpit. It gives about 6,000 c.p., and illuminates the ground for about 100 yds. from a height of 150 ft., and lasts about two minutes. The usual Vérey light is also used for this purpose.

During the War, the English, French and German air services were each independently developing means to assist air pilots in this connection, electrical methods being favoured by France and Germany. German designs mainly embodied metal parabolic reflectors, with medium power filament lamps and without lenses. French designs were more varied, comprising small power wing tip lamps, fuselage lamps—in one type, four lamps with parabolic reflectors in a row, mounted below fuselage—high power filament lamps, with metal or silvered glass reflectors, and complicated front compound lens schemes. English devices developed by the Air Force were much more varied in character, and covered all types experimented with, both in France and Germany, and a special type of gas-filled filament lamp of 1,000-2,000 c.p. for use with standard 12-volt engine starting or general service accumulator. The early models of this latter lamp presented difficulties, but the latest device, consisting of a high power 12-volt filament lamp, with special sealing in devices, mounted in a streamlined and watertight lantern, so as to withstand landing shocks, gives promise of successful results. The lantern gives reflection and diffusion over 180°, and complete lamp weighs 7 lbs.

\* Extract from a Paper read before the Illuminating Engineering Society at the Society of Arts, Jan. 31, 1922.

The consensus of opinion amongst pilots shows that for landing the electric lamp is as good as the chemical flare. The latter is superior at heights above 500 ft., but below this the electric lamp lights up the ground better, especially in a fore and aft direction. The electric lamp also has the advantage of being switched on and off at will, whereas once the flare is lit it must remain on until burnt out. Risk of fire is another point against the chemical flare.

The author next touched upon the important matter of *Aerodrome Lighting*. These are divided into three classes:—(1) Obstruction lights; (2) Illumination of the actual ground; (3) Fixed signs to show the direction of the wind, etc. Briefly, referring to the various obstruction lights erected at Croydon and Lympne, the author proceeded to go somewhat fully into the matter of illuminating the ground. Here, the main object is to flood the whole ground with light, without causing any confusing shadows or bringing any glare into the pilot's eyes.

Various systems have been tried, starting from the Money flare system, in which an asbestos composition, compressed in a wire cage (10 ins. diameter), is soaked in paraffin, is placed in a metal bracket and ignited; a series of these flares are arranged in the form of an "L," the long arm being in the direction of the wind, and the short arm at the windward end. This serves to indicate to the pilot the direction in which he must land, and also the level of the ground without dazzling the pilot. It is a well-tried product, and most night-flying pilots prefer it to any other; it is, however, costly in labour, requiring a party of half-a-dozen men to lay out the flares, and to rearrange them with any shift of wind direction. A substitute has been tried, employing electric lamps, placed along a cable laid out in L-form, but this also requires a number of men to handle it. This last system, elaborated, as used at Croydon, was then described.

The use of powerful searchlights is the first thing to strike one. One objection to these is their running cost, the 36-in. lights at Croydon taking 140 amps. at 60 volts across the arc—a consumption of about 51 units per night per projector. Shadow trouble is another objection to the searchlight, if the pilot lands in the beam. If the beam is concentrated a very narrow path is illuminated, but the pilot can now come in nearly over the projector, and land immediately alongside the beam. Moving the projectors with the shifting of the wind is another trouble. The value of the intense illumination given by a large searchlight has been considered sufficient to instal at Croydon, three 36-in. projectors, arranged in the angles of an equilateral triangle, the beams having a divergence of 45°. For landing, the beam which is most approximately at right angles to the wind is switched on, and used in conjunction with the land "L's."

The French have adopted a similar method, having equipped a motor lorry with four flood lights (Barbier, Bénard and Turenne) using 1,500-watt  $\frac{1}{2}$ -watt gas-filled lamps at the focus of split 200 mm. dioptric lenses. The light given by each is about 15,000 c.p. over an arc of 180° in the horizontal plane.

Considerable attention is being given to the problem of fog-piercing lights, which is still unsolved. Two systems show greater promise than any of the number tested; one consists of an ordinary dissolved acetylene pressure-fed flame, into which is introduced a liquid strontium composition, giving a reddish flame of considerable intensity. The second system, for emergency use only, consists of large composition (magnesium and other earth salts) flares which are ignited electrically, and burn for about five minutes with great intensity (about half a million c.p.). These have not yet been actually used on a machine.

Passing on to *Illuminated Ground Signals*, a description was given of an interesting system employed for emergency landing grounds, when no personnel are available. This consists of an illuminated "T" sign, the long arm 20 ft., and the short arm 10 ft. overall. Each arm is illuminated by lenses placed round a flashing light source (giving 27,000 c.p.) at the junction of the arms. The "T" is visible at about 10 miles from normal flying height. The light is made to rotate so as to indicate the changes of wind direction, and thus serves as a landing light. The whole apparatus is automatic in action, being equipped for six months' unattended operation. Dissolved acetylene and special incandescent mantles are used for the light source; defective mantles are replaced automatically, and the light is lit and extinguished by a sun valve. (Described in *FLIGHT* for April 21, 1921.—Ed.)

*Aerial Lighthouses* may be classified as (a) Navigation Lights and (b) Local Pilotage Lights. Earlier forms of

navigation lights were small, portable lighthouses, of 500 mm. half-optic type, with open burners (dissolved acetylene) and served to help our Service pilots during night flying. But commercial aircraft must be provided with aerial lighthouses in the same way as the marine lighthouse provides for shipping. Marine and aerial lighting are very similar, basically, except that whereas in marine work the greatest available light power is projected to the horizon, the aerial light must throw its rays through practically the whole upper hemisphere—and it is, obviously, impracticable for aviators, when approaching a lighthouse, to reduce height steadily in order that they may remain within the beam.

This problem has demanded more thought and experiment than would at first appear, and various methods have been tried out.

In his concluding remarks, the author briefly described the Croydon type aerial lighthouse (described in *FLIGHT*, April 21, 1921) and Cone (Local Pilotage) lights. He also referred to the question of modifying marine lighthouses, to meet the need of aviators. A number of observations have been made from the air, and it has been found that certain existing marine lights are of considerable assistance to aerial navigation. It is not, at present, proposed to make any alterations to marine lighthouses in this country.

## THE LONDON-CONTINENTAL SERVICES

### FLIGHTS BETWEEN JANUARY 23 AND FEBRUARY 4, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
			Mails	Goods				
Croydon-Paris ...	13	36	5	10	13	h. m. 2 46	D.H. 18 G-EARO (2h. 10m.)	B. (1), D.H. 4 (1), D.H. 18 (3), G. (3), H.P. (1), Sp. (2).
Paris-Croydon ...	16	32	6	11	12	2 56	Spad F-ACMI (2h. 18m.)	B. (3), D.H. 4 (1), D.H. 18 (3), G. (3), H.P. (1), Sp. (3), V. (1).
Totals for 2 weeks ...	29	68	11	21	25			

\* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).  
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.  
P. = Potez. R. = Rumpler. Sa. = Salmson. Se. = S.E. 5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

## PERSONALS

### Married

A. E. DIRCKS, late R.A.F., Dept. of Agriculture, Kenya Colony, son of Mr. I. F. W. Dircks, East London, The Cape, was married on December 22, at the Memorial Cathedral, Mombassa, to WALWYN ST. CLARE COBLEY, daughter of Mr. W. H. Cobley, I.S.O., late Natal Civil Service, Maritzburg, Natal.

### Death

THE death took place on January 26, at West Wrating,

near Newmarket, of Mr. EDWARD PURKIS FROST. Mr. Frost, who was born in 1842, was one of the first members of the Royal Aeronautical Society. He became a member of its council, and later its president, retiring from the chair in 1911. Mr. Frost spent much time in observation of the flights of birds and insects. His early experiments in building aeroplanes were spoiled largely for want of engine efficiency. King Edward, when Prince of Wales, once visited Mr. Frost's workshop, and expressed great interest in his experiments.

## AIRSHIP CONFERENCE

AN International Conference has been arranged for February 14, and the representatives of all nations interested in commercial airship work will meet at Australia House under the Presidency of Mr. Ashbolt, the Agent-General for Tasmania, at 10.30 a.m.

The purpose of the Conference is to standardise mooring and replenishing arrangements, so that all airships can be received at any airship station should stress of weather or other circumstances make this desirable, and so increase

the safety and reliability of airship travel. Anyone having proposals for mooring airships and for supplying them with gas, fuel and water, which they may wish to have considered by the Conference, are requested to communicate with the Hon. Secretary, Commander F. L. M. Boothby, R.N., C.B.E., F.R.Ae.S., c/o Royal Aeronautical Society, 7, Albemarle Street, London, W. 1. Representatives of the United States, France, Spain, Italy, Germany and Great Britain have already arranged to attend.

## THE INSTITUTION OF AERONAUTICAL ENGINEERS

LIEUT.-COL. J. T. C. MOORE-BRABAZON, M.C., M.P., who has consented to become President for the coming year, will give his Presidential Address and a paper on "The Early Days of Aviation" on February 23 at 8 p.m., at the Royal Society of Arts, Adelphi. Tickets may be obtained by application to the Institution of Aeronautical Engineers.

Other Fixtures.—February 15: Visit to the Works of Messrs. D. Napier and Son, Acton, to see the manufacture

and testing of the famous Napier aero-engines. Meet at the works at 2 p.m. March 4: Visit to the Instone Air Line, at the Croydon Aerodrome. Meet at the aerodrome at 3 p.m. March 22: Visit to the De Havilland Works of the De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware, at 3 p.m. Meet at the works; Paper, "Seaplane Design," by Mr. W. O. Manning, at the Engineers' Club, Coventry Street, at 8 p.m. March 31: Paper, "Aircraft Design," by Mr. Folland, Royal Society of Arts, at 8 p.m.



# THE ROYAL AIR FORCE

London Gazette, January 31, 1922

## General Duties Branch

The following are granted perm. comms., retaining their present substantive ranks and sen. except where otherwise stated, with effect from the dates indicated. *Gazettes* of these dates, appointing them to short service comms., are cancelled:—

*Flight Lieuts.*—E. D. Johnson, A.F.C.; Sept. 12, 1919. F. H. Laurence, M.C.; Oct. 24, 1919. A. L. Messenger, A.F.C.; Sept. 12, 1919.

*Flying Offrs.*—C. T. Anderson, D.F.C.; Oct. 24, 1919 (since promoted). A. L. A. Perry-Keene; Sept. 12, 1919. J. G. Walser, M.C.; Sept. 12, 1919.

The following are granted perm. comms., retaining their present substantive rank and sen., with effect from the dates indicated. *Gazettes* of dates indicated in brackets, appointing them to short service comms., are cancelled:—

*Flying Offrs.*—E. Burton; June 30, 1920 (July 2, 1920). A. T. S. L. de Lacroix; Aug. 23, 1920 (Aug. 27, 1920). M. G. L. T. Leroy, A.F.C.; June 1, 1920 (June 15, 1920).

*Observer Offr.*—J. F. Titmas; July 14, 1920 (July 23, 1920).

A. T. Chapman is granted a short service commn., as a Pilot Offr., on probation, with effect from, and with sen. of, Jan. 18. Flight Lieut. E. Drudge is placed on half-pay, Scale B; Jan. 31. Flight Lieut. P. Worthington is transfd. to the Reserve, Class B; Feb. 1. Flying Offr. C. O. Anson relinquishes his short service commn. on account of ill-health, and is permitted to retain the rank of Lieut.; Feb. 1. Observer Offr. M. G. Ryan (Lieut. E. Larcs, R.) relinquishes his temp. commn. on retirement from the Army; Feb. 1.

## Medical Service.

Capt. O. Armer, Army Dental Surgeon, is granted a temp. commn. as a Flight Lieut. while attached for duty with the R.A.F.; Nov. 30, 1921. He will continue to receive emoluments from Army funds.

## Memorandum

Lieut. W. N. Sherlock is re-classified from Flying O to Flying A; May 16, 1919 (since granted short service commn.). The permission granted to Lieut. H. Howard to retain his rank is withdrawn on his joining the Army; Jan. 5.

London Gazette, February 3, 1922

Group Capt. E. R. Ludlow Hewitt, C.M.G., D.S.O., M.C., A.D.C., is appointed Air Secretary to the Secretary of State for Air, and relinquishes the appointment of Deputy Director of Training, Air Ministry; Feb. 1. Group Capt. P. L. W. Herbert, C.M.G., C.B.E., is appointed Deputy Director of Training, Air Ministry; Feb. 27.

## General Duties Branch.

Wing Commander F. Ranken, O.B.E., is placed on half-pay, Scale B; Feb. 1. Flying Offr. H. V. Rowley is placed on half-pay, Scale B, from Dec. 22, 1921, to Feb. 21, inclusive.

## Memoranda

The following Cadets are granted honorary comms. as Sec. Lieuts., with effect from the dates of their demobilisation.—182045 C. Alexander, G21718 T. H. Chessun.

Sec. Lieut. D. A. Stenhouse is transfd. to the Unemployed List; March 5, 1919 (substituted for *Gazettes*, March 18, 1919, and June 10, 1919).

## Errata

*Gazette* of Jan. 27.—For L. G. A. Kirchener read L. G. A. Kirchner. *Gazette* of June 22, 1920, for J. G. P. B. Angell read John Beazley Patrick Angell.



## Over the Alps

ZANETTI, the Italian pilot, is reported by the Paris correspondent of the *Daily Mail* as having flown the Alps at an altitude of 30,500 ft. Starting from near Lake Maggiore, Italy, he flew to Antibes, alighting there in a gale, close to the lighthouse.

## Washington Armament Agreement

In the final draft of the Washington Agreement, which, it is now stated, has been agreed to by all the nations concerned, the total tonnage of aircraft carriers is fixed as follows: United States and Great Britain, 135,000 each; France and Italy, 60,000 each; Japan, 81,000.

## The Pope Election and the Aeroplane Watchers

ACCORDING to the *Conservatore Romano*, the official Vatican organ, very great objection is taken to aeroplanes which, on several occasions, have flown low above the Vatican during the Conclave. It is considered, they state, a breach of the Italian Government's promise of protection, which all seems much ado about nothing, as the occupants can hardly see more from above than those watchers on *terra firma*. No doubt, it will end in smoke.

## Air Post to the Rescue Again

HOLLAND and Sweden are feeling the direct effects of the German railway strike, the mails from and through Germany having been completely suspended. Holland at once remedied their part by carrying the mail by aeroplane. Sweden, in a like predicament, is endeavouring also to recommence the air-service for mail-carrying, as the British mails are carried *via* Germany.

## Honouring Aviation in France

THE importance attached to the progress of aviation in France may be in part judged by the Legion of Honour appointments just made. These include one "Cravate," three "Rosettes," and seventeen Crosses. M. Clement Ader comes in for the Commander "Cravate," and the officers' "rosettes" fall to MM. Louis Blériot, Georges Bescancon (Secretary-General of the A.C. de F. and Editor of *l'Aerophile*); M. Delage of Nieuport-Delage; and M. René Hanriot. The seventeen Crosses include the Under-Secretary of State for Aeronautics, MM. Lemoine (of Peugeot's); Henri Claudel, of carburettor fame; Dick Farman, brother of Henry and Maurice Farman; L. de Saint-Germain (Gnôme and Rhône); and François-Marie Le Men, a prominent commercial aeroplane pilot.

## Berlin-Moscow by Air

It looks as if the attempt to link-up Berlin with Moscow is to be seriously made, as further details are reported from Berlin, in regard to the agreement which the Soviet Government have made with the Aero Union Company in Berlin. This is for a regular service between Germany and Russia of aeroplanes belonging to the Soviet Government, under the name of the German-Russian Air Co.

The first route is to be between Königsberg and Moscow, in

connection with the night express to Moscow. The arrangements are in the hands of German and Russian experts, and the route service is being organised by the Deutsche Luft Rederei. One object of the service is to promote an official courier service between Berlin and Moscow. The Aero Union is associated with the A.E.G., the Zeppelin Co., and the Hamburg-Amerika Line.

## Fruit by Air for Covent Garden

It is not improbable, according to the *Daily Telegraph* that this year a serious effort will be made to enlist the services of the aeroplane for the conveyance of products to Covent Garden. For some time past, Continental growers have been attracted by this new and speedy method of transport. Last year, an early consignment of Dutch tomatoes reached London by an air route. On another occasion strawberries were brought from France by aeroplane; and when an English railway strike was threatened a Belgian grower suggested that he should send his fruit by aerial transport. The aerial service that is now receiving serious consideration is one that would make the aeroplane a link between an important growing centre and Covent Garden. Plans have been discussed with the growers, and there is a keen desire to see experiments made this season. It is not, of course, proposed to drop consignments from the air on to the roof of the market; but a landing place not far from Covent Garden has been suggested. The movement is in its initial stage, and developments are awaited with interest.

## As to Aviation in 1930?

In response to a request for opinions upon what stage aviation is likely to have reached in 1930, our Paris contemporary, *L'Auto*, has been able to publish quite a number of opinions, illuminating and otherwise, pessimistic (a few), optimistic (the majority) and fantastic (one or two). The forecast we fancy most of all, as summarising aviation's possibilities in a nutshell, is the reply of M. Pierre Lafitte, as follows:—

In 1860, in general conversation upon the railway.

*Unanimous conclusion.*—"Never can the railway be in any way a practical form of locomotion. It can only be of service to an acrobat or a fool."

In 1885, in general conversation upon the bicycle.

*Unanimous conclusion.*—"Never can the bicycle be in any way a practical form of locomotion. It can only be of service to an acrobat or a fool."

In 1895, in general conversation upon the automobile.

*Unanimous conclusion.*—"Never can the automobile be in any way a practical form of locomotion. It can only be of service to an acrobat or a fool."

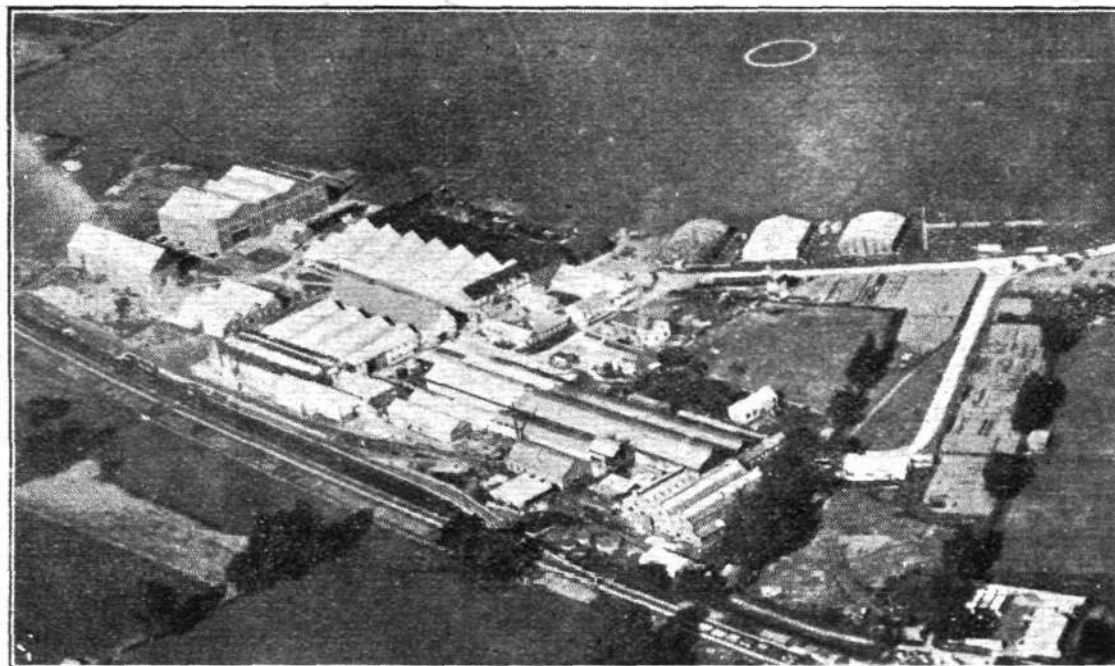
In 1919, in general conversation upon the aeroplane.

*Unanimous conclusion.*—"Never can the aeroplane be in any way a practical form of locomotion. It can only be of service to an acrobat or a fool."

In 1930—

"... Draw your own conclusions!"

Westland Aircraft Works, Yeovil, photographed from the air. A good idea may be formed from this photograph of the extent and layout of these works, which, being built during the War, are of the most up-to-date type. At present they also house part of Petters, Ltd., the parent company.



## London Aero Models Association

At the General Purposes Committee held on Thursday, February 2, the question of Country Members and Affiliation of Provincial Clubs was discussed with very great thoroughness, and the Secretary will be in a position to notify all those who are interested in the L.A.M.A. as soon as the particulars have been received from the printers.

On Thursday, February 9, a Smoking Concert will be held at Headquarters, 20, Great Windmill Street, Piccadilly, W. 1.

On Thursday, February 16, Mr. F. J. Camm is giving the second part of his lecture, "Model Aeronautical Research," and the Committee earnestly hope that all members will make a special effort to be present on this occasion.

On Thursday, February 23, a meeting of the General Purposes Committee will be held so as to discuss the programme of Competitions for the ensuing six months.

The Secretary regrets the delay in sending out particulars of the Association to those who have made enquiries from the provinces; they will have full particulars at a very early date.

Full particulars as to membership, etc., can be had from the Hon. Sec., Mr. A. E. Jones, 48, Narcissus Road, West Hampstead, N.W. 6.

## The Aveline Stabiliser at Croydon

On Monday last a Farman Goliath, fitted with the Aveline Automatic Stabiliser, arrived at Croydon from Paris. Comte de La Vaulx was amongst the passengers, and the pilot was M. Chaillous—who also piloted a machine fitted with the Aveline Stabiliser from Paris to Amsterdam some little time back. Demonstration flights with the Goliath referred to above were made at Croydon last Wednesday, and will probably be continued today (Thursday). The Aveline Stabiliser was described in *FLIGHT* for Feb. 21, 1921.

## Lieut. Parer Crashes

LIEUT. PARER—who, with Lieut. McIntosh, flew from England to Australia in 1920—when starting for a renewed attempt to fly 10,000 miles round Australia, accompanied by his cousin, Mark Parer, last Tuesday, had the misfortune to collide with a telegraph post and crashed. Lieut. Parer was not badly hurt, but his cousin is dangerously hurt.

## PUBLICATIONS RECEIVED

*The Airliner and its Inventor*, Alfred W. Lawson. By Cy. G. Faunce. Rockcastle Publishing Co., 55, East Main Street, Columbus, Ohio, U.S.A.

*Analogies Mécaniques de l'Électricité*. By J.-B. Pomey. Gauthier-Villars et Cie., Quai des Grands-Augustins, 55, Paris. Price, 15 fr. net.

*Light Carpentry Designs*. Evans Bros., Ltd., Montague House, Russell Square, London, W.C. 1. Price 3s. 6d. net.

*Technical Note No. 81. Langley Field Wind Tunnel Apparatus*. By D. L. Bacon. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

*Report No. 124. Aerodynamic Characteristics of Aerofoils—II*. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

### APPLIED FOR IN 1920

Published February 2, 1922

20,718. H. JUNKERS. I.C. engines for aircraft. (148,895.)  
27,566. I. WILLIAMS. Means for supporting and propelling flying-machines. (173,586.)

Published February 9, 1922

18,961. G. CAPRONI. Cellular structure for five-plane aeroplanes. (147,017.)  
18,988. A. FLETTNER. Apparatus for steering aircraft. (147,034.)  
20,082. A. FLETTNER. Steering-planes of aircraft. (148,172.)  
20,087. A. FLETTNER. Apparatus for steering aircraft. (148,177.)  
20,101. A. FLETTNER. Auxiliary steering-apparatus for aircraft. (148,188.)  
20,112. A. FLETTNER. " " " " " (148,194.)  
20,134. A. FLETTNER. " " " " " (148,211.)  
20,204. A. FLETTNER. " " " " " (148,293.)  
20,207. A. FLETTNER. " " " " " (148,296.)

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